

MANUFACTURERS RECORD



A Weekly Newspaper Devoted to the Industrial, Financial, Railroad,
Mining, Contracting, Engineering, Building, and General
Business Interests of the South and Southwest

Vol. 61
No. 13

ESTABLISHED 1882

\$4.00 Per Year
Single Copy 15 Cents

In This Issue:

Southern Cotton Manufacturers in
Session at Washington.

Richmond, Va., a Type of Southern
Growth Through Southern
Energy.

English Capital in Southern Hydro-
Electric Development.

A Warning as to Immigration to the
South.

Alphabetical Index, Page 146.

Classified Index, Pages 140 to 145.

Classified Opportunities, Pages 94, 95 and 96.

BALTIMORE, APRIL 4, 1912

CLINCHFIELD COAL

CLEAN



LUMPY

"NEVER SHORT OF CARS"

MINED BY
Clinchfield Coal Corporation
DANTE, VA.

SOLD BY
Clinchfield Fuel Company
SPARTANBURG, S. C.

PERFORATED METALS FOR ALL USES

You will find our prices and goods "RIGHT"
Send complete specifications.
Send for Metal sample plate **Erdle Perforating Co., Rochester, N. Y.**



Bliss Inclinable Power Presses are Service Presses



They are built in eighteen (18) sizes, all in stock, and adapted for nearly all the operations required in the manufacture of tin cans, pieced tinware, metal packages, electrical goods, brass goods, trimmings, etc. Catalogue No. 1-F describes these presses. Send for it.

"Bliss Presses for Every Purpose."

E. W. BLISS CO. 4 Adams Street
Brooklyn, N. Y.

Representatives for Chicago and Vicinity, Stiles-Morse Co.,
562 Washington Boulevard, Chicago, Ill.



"Ladies Friend" Water Power Washer

A Positive Reliable Machine—The Most Simple one Made.
Has No Gears—No Complicated Parts—Has but One Valve—
Requires No Oiling—A Signed Guarantee with each Machine.

Write for Particulars—A Good Proposition for the Dealer or Jobber.

The D. L. Bates & Bro. Co. Dayton, Ohio



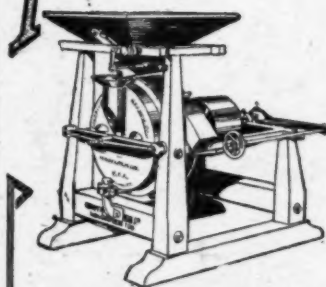
No. 62 Pig Iron Barrow.

WHEELBARROWS OF ALL KINDS

Also the Largest Line of
DRAGS, ROAD AND WHEEL SCRAPERS, HAND
CARTS, TRUCKS, Etc.

SYRACUSE CHILLED PLOW CO.
SYRACUSE, N. Y., U. S. A.

N & M Co. GRINDING MACHINERY



"N & M Co." Burh Stone Mills

have the durability and reliability that comes from the greatest care and skill in manufacture. The same is true of "N & M Co." flour and cereal milling machinery in general.

Send for Catalogs.

NORDYKE & MARMON CO.

AMERICA'S LEADING MILL BUILDERS

1833 W. Morris St. Indianapolis, Ind.

Sixty Years of Successful Manufacturing.

SALEM FOUNDRY & MACHINE WORKS

SALEM, VIRGINIA

Manufacturers of FLOUR AND CORN MILL MACHINERY, WOOD SPLIT AND IRON PULLEYS,
RING OIL HANGERS, COUPLINGS, GEARINGS, COLLARS, Etc.

Shafting, Belting, Mill and Elevator Supplies in Stock.

Roll Corrugating a Specialty.

Write for Prices.

Flour Mill and Elevator MACHINERY

Roll Grinding and Corrugating
Designing and Remodeling Mills a Specialty

We Take Contracts for Millwright Work Complete.

L. R. VEATCH & CO. 110 East A Street,
LOUISVILLE, KY.



Every Requisite of the Draftsman or Engineer

DRAWING PAPER
MATHEMATICAL INSTRUMENTS
DRAFTING ROOM FURNITURE
SLIDE RULES
SURVEYING INSTRUMENTS
MEASURING TAPES

Our new circular on Slide Rules lists and describes more than 35 different kinds of Calculating Rules. Copy sent on request.

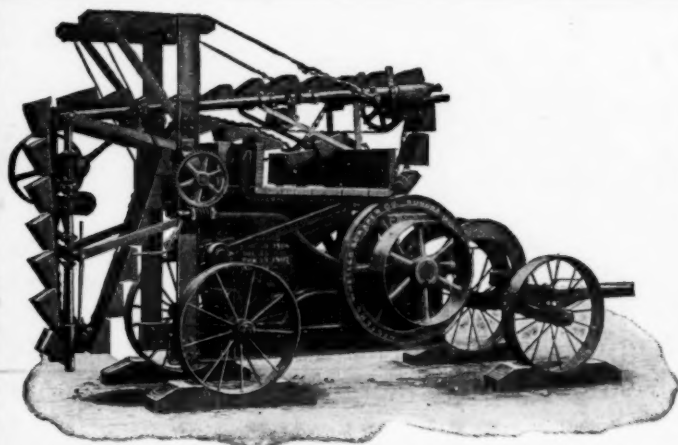
Send for our complete catalogue.

KEUFFEL & ESSER CO.

127 Fulton Street
NEW YORK

General Office and Factories
HOBOKEN, N. J.

CHICAGO ST. LOUIS SAN FRANCISCO MONTREAL
68 W. Madison St. 813 Locust St. 45-50 Second St. 252 Notre Dame St. W.
Drawing Materials Mathematical and Surveying Instruments Measuring Tapes



AURORA ROCK CRUSHERS

The Crushers that Stand Up
Under the Severest Test

Owing to its short frame and compactness, this outfit is most convenient. It is of simple construction, having few parts to wear and few bearings, consequently the least friction, and is light running.

Castings of steel, practically unbreakable. An important improvement, making it absolutely dependable for hard service.

WRITE FOR PRINTED MATTER.

WESTERN WHEELED SCRAPER CO.

AURORA, ILLINOIS

EARTH AND STONE HANDLING MACHINERY



COLUMBIA LAMPS

Skilled labor, competent engineering and research facilities, and an abundance of capital have been correlated by efficient management and made to produce Columbia quality in incandescent lamps. This four-square progressive force has produced Columbia lamps for twenty-three years.

We believe we have reached the acme of efficiency and economical service in the Columbia Mazda lamp; we know these lamps may serve you well.

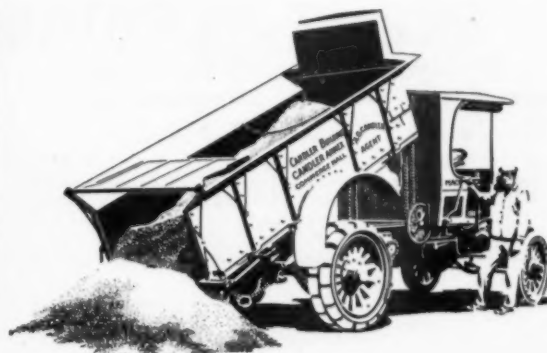
The Columbia Incandescent Lamp Co.

Established 1889

ST. LOUIS, MO.

BRANCH OFFICES

Philadelphia Memphis Dallas
Boston Chicago San Francisco
New York Minneapolis



This truck
hauls 6 to 8 loads
daily
(over a 5-mile route)
taking the place of
three teams.

Proved by
12 years of
real service

Mack and Saurer

Proved by
17 years of
real service

"Leading gasoline trucks of the world"

¶ A money-making truck is of the size and style exactly suited to its use.

¶ It destroys a light truck to overload it, and wastes the power and investment in a heavy-load truck not to utilize its full capacity. The wrong body is inconvenient and may jeopardize the load.

¶ We build a truck for each transportation need. Capacities 1, 1½, 2, 3, 4, 4½, 5, 6½, 7½ and 10 tons. Bodies of every style built in our own plant (special design if required).

¶ Also—and important to right selection—we have authoritative data on truck service for practically every line of business. This information is at your disposal. Write for that referring especially to motor-truck transportation in all lines of manufacturing.

¶ Consult our Engineering Department about any transportation question. It is wholly at your service.

International Motor Company

General Offices
57th and Broadway New York
Sales and Service Stations: New York, Chicago, Philadelphia, Baltimore, Boston, San Francisco and other large cities.
Works
Allentown Pa; Plainfield N J

SPECIALTIES FOR POWER HOUSE LUBRICATION

TURBOIL

TRADE MARK

FOR

TURBINE LUBRICATION



GAS CYLINDER OIL

TRADE MARK

FOR HIGH-DUTY GAS ENGINES USING
NATURAL, PRODUCER OR FURNACE GAS

GET THE ORIGINAL AND SUCCESSFUL BRAND

NEVER FAILED

BORNE, SCRYMSER COMPANY

80 SOUTH STREET, NEW YORK

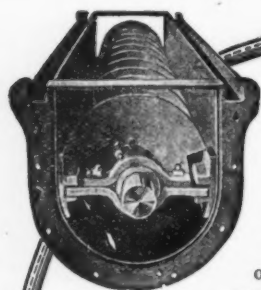
POWER PLANT REPAIRS

Engines, Boilers and Pumps Repaired
Cylinders Bored Without Dismantling

WE ALSO BRAZE BROKEN CASTINGS

CORRESPONDENCE SOLICITED

THE STRICKLAND MACHINE CO.
RICHMOND, VA.

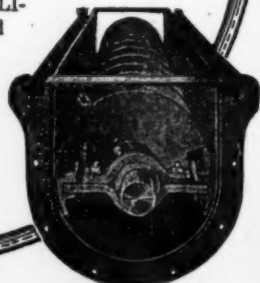


HELICOID

Catalog
34

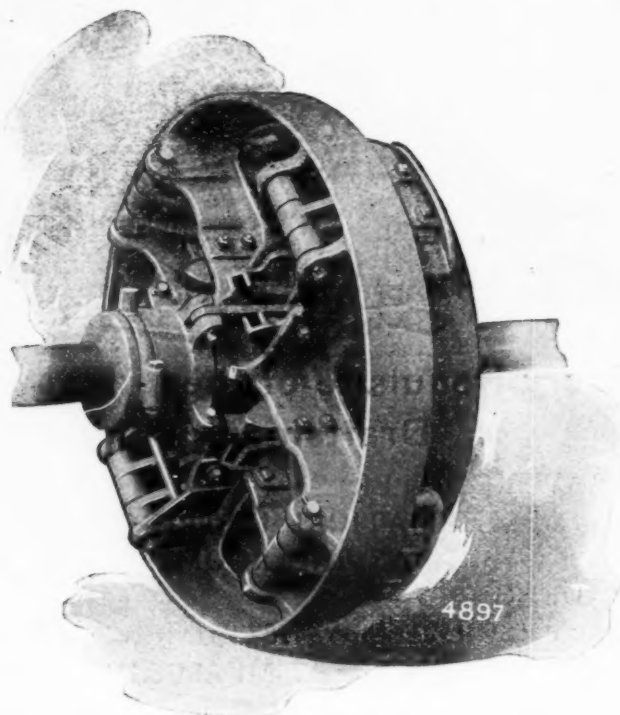
The screw conveyor in its most perfect form—HELICOID—is still made by the Caldells at Chicago, and nowhere else. Caldells are the only people who actually roll a continuous conveyor flight, by any process. Others roll or press short flights which have to be lapped and riveted together and pinned to the pipe at every turn. But they're just beginning where Caldells left off several years ago. A screw conveyor is economical and requires little room, and while you're buying, buy the best; buy HELICOID with continuous flight and metal properly distributed in the flight—HELICOID with larger shaft, greater capacity and increased durability. HELICOID is all-round satisfaction at the same price.

Steel
Boxes



**H. W.
Caldwell & Son Co.**

Chicago, Western Ave., 17th-18th St.
NEW YORK
Fulton Bldg., Hudson Terminal, 80 Church St.



The EWART Clutch

"The Safe Clutch"

Designed twenty years ago by the inventor of Link-Belting.

The original design followed today with no essential change.

Thousands in successful use.

A Reliable Clutch

Notice the continuous ring which ties all the driving arms together.

A Safe Clutch

See how this ring covers the mechanism, and notice absence of projecting lever.

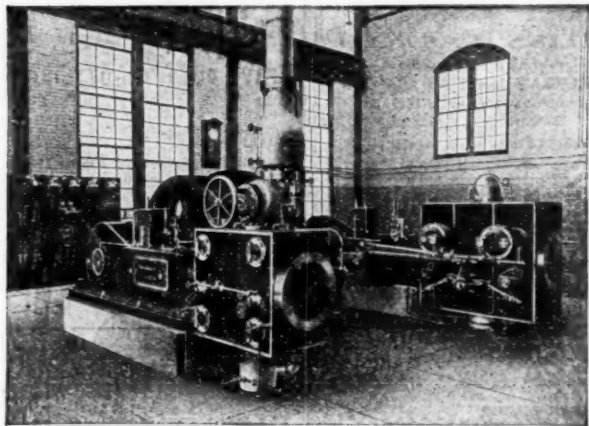
Our Book No. 121 shows why the "Ewart" Clutch is the best protected and safest Clutch on the market. A copy will be sent postpaid upon request. Address nearest office.

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

New York.....299 Broadway	St. Louis....Central Nat'l Bank Bldg.
Boston.....131 State Street	Seattle.....118 King Street
Buffalo.....601 Ellicott Square	Denver.....Lindrooth, Shubart & Co.
Pittsburgh.....1601-3 Park Bldg.	San Francisco.....Eby Machinery Co.
New Orleans...Willmot Machinery Co.	

Ball Engines for Electric Service



BALL ENGINE COMPANY
ERIE, PA.

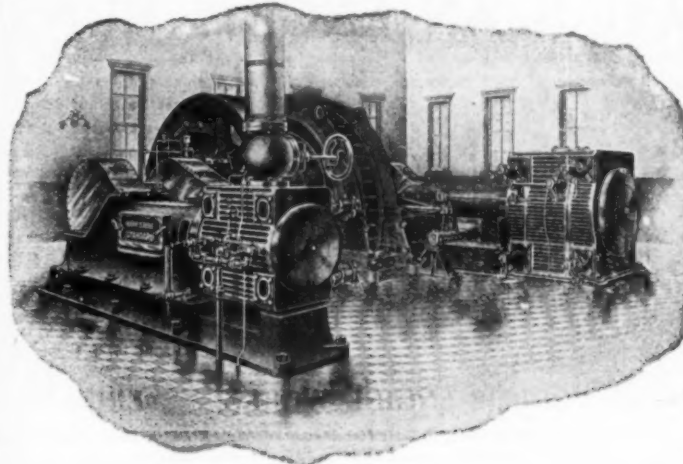
Southwark Foundry & Machine Co.

PHILADELPHIA, PA.

Steam and Hydraulic Engineers

COMPLETE POWER PLANTS

ENGINES—TURBINES—CONDENSERS



Fleming Harrisburg Engines

Have established an enviable record. EXCELLENCE OF DESIGN, CAREFUL SELECTION OF MATERIALS, and PAINSTAKING ACCURACY OF CONSTRUCTION produce in them LONG LIFE, ECONOMICAL and UNIFORM-LY REGULAR OPERATION. They are the logical result of THIRTY-THREE YEARS of successful engine building experience. These

points are appreciated by CAREFUL INVESTORS.

Single and
Corliss Valve

Simple and
Compound

Manufactured by

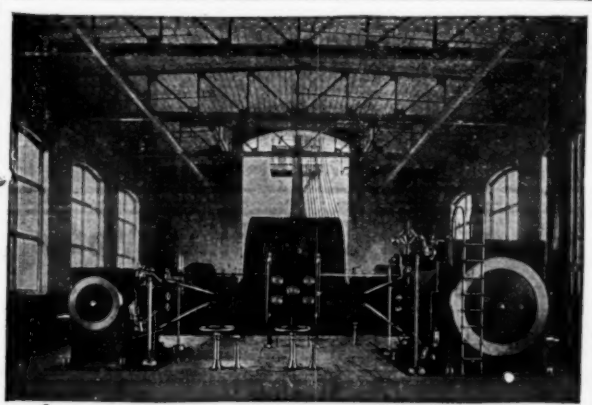
Harrisburg
Foundry & Machine Works

Harrisburg, Pa., U. S. A.

BALTIMORE OFFICE
Continental Building

ATLANTA OFFICE,
Third Nat'l Bk. Bldg.

NEW ORLEANS OFFICE
Hennen Building



The C. & G. Cooper Company

MT. VERNON, OHIO.

ENGINE BUILDERS

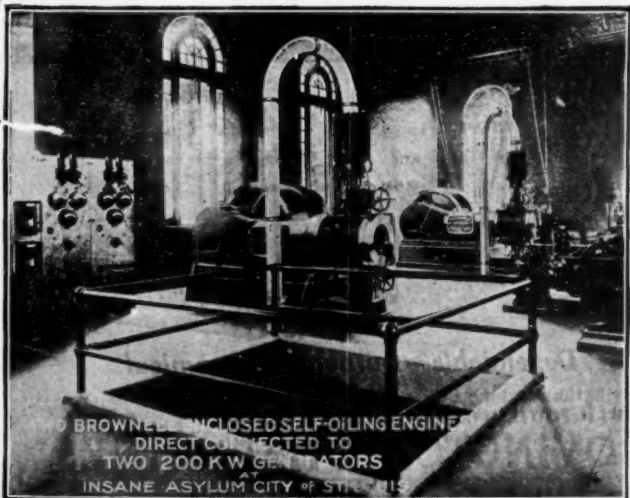
WE ALSO FURNISH

**COMPLETE STEAM
PLANTS**

ATLANTA, 500 Candler Annex
CHARLOTTE, Courthouse Square
NEW YORK, 1419 Bowling Green Building

BOSTON, 201 Devonshire St.
PHILADELPHIA, Drexel Building
PITTSBURGH, 604 Frick Building

CHICAGO BRANCH, 1530 First National Bank Building.



BROWNELL ENCLOSED SELF-OILING ENGINE
DIRECT CONNECTED TO
TWO 200 KW GENERATORS
AT
INSANE ASYLUM CITY OF ST. LOUIS

BROWNELL

can furnish you

Complete Power Equipment

embodying most modern type of apparatus,
insuring economy, efficiency and satisfaction.

BROWNELL Engines, Boilers, Feed-Water Heaters are
unsurpassed. Continuous manufacture for 56 years
guarantees the line.

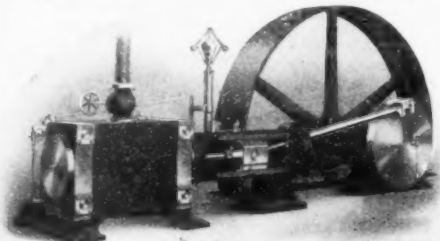
The Brownell Co., Dayton, Ohio

ST. LOUIS, MO.
Bank of Commerce Bldg.

CHICAGO, ILL.
Monadnock Bldg.

WHEN AN ENGINE RUNS

smoothly and noiselessly under widely varying loads, night and day continuously; when it economically uses steam and reduces fuel consumption, and besides needs practically no repairs, it deserves the special consideration of every power plant owner in the country.

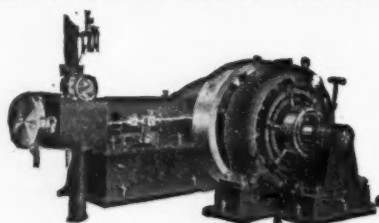


The Nagle-Corliss Engine does this, and we'll gladly send catalogues, testimonials and other details to anyone interested.

NAGLE CORLISS ENGINE WORKS, ERIE, PA.

Phoenix Iron Works Company

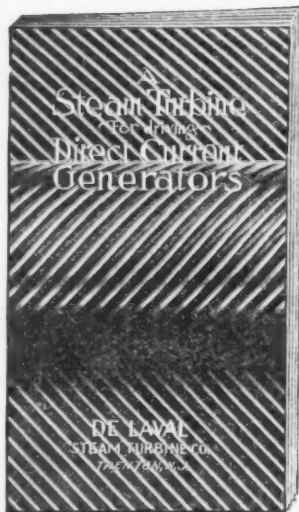
BUILDERS OF



**Automatic
Cut-off
Engines**

ALSO

Boilers, Heaters, Tanks and Gas Condensers.
General Offices and Works, **MEADVILLE, PA.**
NEW YORK CITY, 133 William Street

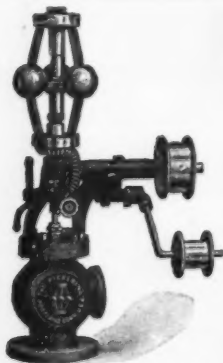


The Why Of Steam Turbine Types

THIS booklet explains the problems involved in selecting the best type of steam turbines, that is, the problem of reaching a compromise between the tremendous velocity of spouting steam and the comparatively moderate speeds demanded by the driven machinery, such as direct-current generators, centrifugal pumps and blowers, and for belt and rope driving.

The pamphlet compares the several methods of compromise which have been adopted, such as pressure and velocity staging and combinations of the two, and describes a fourth method, which permits the turbine to be built with the number of stages best adapted for the capacity and to secure substantial and reliable construction and to run at the speed most favorable for high efficiency, while the driven machine may run at any speed required. This is the greatest advance in steam turbines made for many years, and you should be familiar with it. Ask for Pamphlet "D-45."

DE LAVAL
STEAM TURBINE CO. TRENTON, N. J.



For Steam Engines, Turbines,
Gas Engines and Mechanical Control.

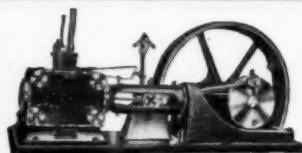
PICKERING "THE GOVERNOR WITHOUT JOINTS"

Directness of Action Gives
Greater Efficiency Maximum Durability
BECAUSE—

Absence of joints not only insures closer regulation when installed, but equal efficiency under continued duty, for lost motion cannot result with absence of joints. Stability in Action and Durability in continued duty effects economy, whether Electric Light Service, Saw Milling, or Dredging and Ditching.

**WIDE RANGE SPEED CHANGER
AUTOMATIC SAFETY STOP**

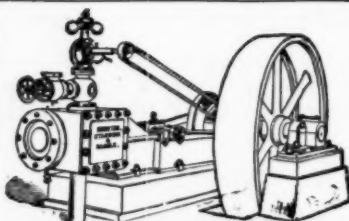
The PICKERING OVERNOR COMPANY
PORTLAND, CONNECTICUT, U. S. A.



CORLISS ENGINES

Boilers of all Styles and Sizes
THE MURRAY IRON WORKS CO.
INCORPORATED FEB. 1, 1870
BURLINGTON, IOWA

Engine on exhibition in the Bourse, Philadelphia, Pa.



HEAVY DUTY THROTTLING ENGINES

We build a larger number of this type than anyone else in America. Shaft governor Engines.
BOILERS—large finely equipped works.
THE HOUSTON, STANWOOD & GAMBLE CO., Cincinnati, O.

THE PRIMM OIL ENGINE

OPERATES ON

Crude, Fuel, Gas or Solar Oils, Distillate, Kerosene or Gasoline.

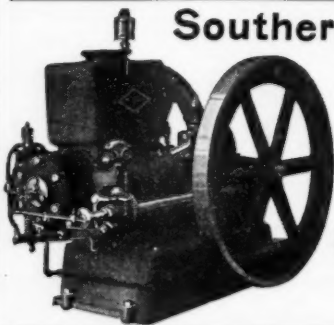


Two cycle type.
Steady as a clock.
Perfectly dependable
for any purpose.
Write for catalog and
name of nearest representative.

That for week—Our engines run while you work.

The Power Mfg. Co.
Cor. Greenlawn Ave. and C. & E. R. R.
LIMA, OHIO

Southern Gasoline Engines



We make an improved heavy duty gasoline engine of all sizes for all purposes.

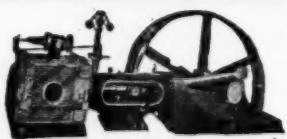
Agency Contracts Still Open

Write for Catalogues and full information.

Southern Engine & Boiler Works
Manufacturers
JACKSON, TENN.

JOLIET FORGE COMPANY, Joliet, Illinois
Steam Shovel
Corliss Engines
Mining Machinery
Cement Machinery
Gas Engine
FORGINGS

Send us your blue prints for our quotations.



THE Griffith & Wedge Co.

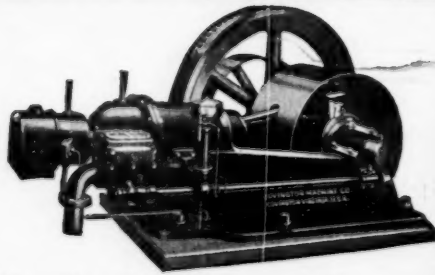
Established 1840
ZANESVILLE, OHIO, U. S. A.
Manufacturers of
The Ohio Corliss Engine
Send for Catalogue.

The Akerlund Bituminous Gas Producer FOR CHEAP AND RELIABLE POWER

Write for Information

STANDARD GAS POWER CO. Walton Building ATLANTA, GA.

ASK YOUR
CONSULTING
ENGINEER

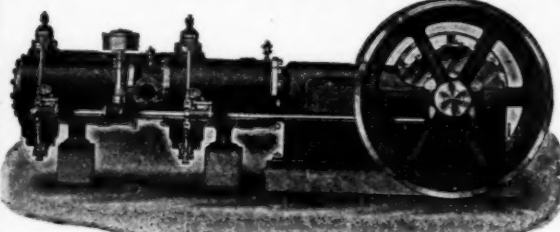


Dependable—Durable—Economical

Covington Machine Co. Works: Covington, Va.
BURT D. POWELSON, Sales Agent • 4 Rector Street • New York

COVINGTON OIL ENGINES

BOGART GAS ENGINES
Enclosed Dust and Dirt Proof Bed
Especially Adapted to Mill Elevators and Cotton Gins




Gives Perfect Speed.
Made in all sizes.
No cylinder packing to blow out. Automatic lubrication and timing of ignition fully described in Bulletin 19.

Requires less attention than a steam engine.

Bogart Gas Power Engineering Co.
Buffalo, N. Y.

OTTO



LOOK INTO THE Otto Gas Engine

They stand an X-Ray inspection

Examine closely the mechanical design—the result of 36 years' experience of the combined engineering skill of six Otto factories.

Examine the high grade material throughout—we would use better, but it don't exist.

Examine the painstaking machine work and finish—you cannot find better workmanship or its equal on any steam or gas engine.

The result is the most dependable prime mover obtainable—the winner of all tests on economy, the lowest in cost of upkeep.

Thousands of Otto's sold in the 70's and 80's are still giving good service.

There are over 108,500 satisfied Otto users today. Ask us today to mail descriptive Bulletins of an engine of the size you may need later.

The Otto Gas Engine Works

3221 Walnut St., PHILADELPHIA, PA.

THE MIETZ & WEISS OIL ENGINES

Stationary 2 to 400 H. P. Marine 2 to 400 H. P. 150,000 H. P. in operation.

Operate on Kerosene, Cheap Fuel Oils, Crude Oil, Alcohol and Distillate, Etc.

Direct connected to Generators, Pumps, Hoists, Etc.

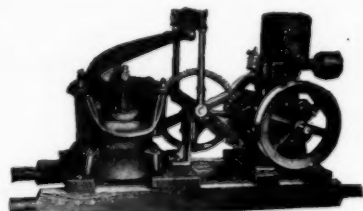
Thousands in use in all parts of the world.

Send for Catalogue.

A. MIETZ

129 MOTT STREET, NEW YORK

100 H. P. engine using three-cent-per-gallon fuel saves over gasoline at nine cents per gallon \$1800 per year, which represents a capital of \$36,000 at 5 per cent. interest. The same saving can also be had over a steam plant of the same capacity.

Novo Contractor's Trench Pump Outfit.

The Novo Engine is simple, easy to start and run, guaranteed free from freezing troubles. It is the lightest engine for power developed—making it readily portable and especially valuable for contractors. Made in 1 to 10 H. P.

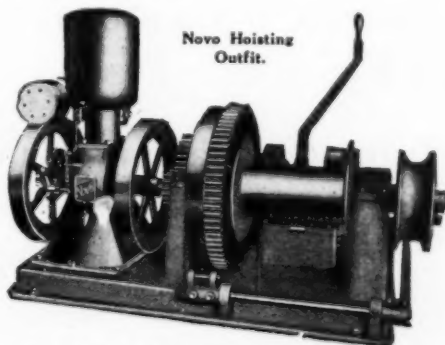
"The Engine for Every Purpose"

NOVO ENGINE

and

Hoisting and Pumping Outfits

will do your power work—hoisting, water pumping, cement and mortar mixing, rock crushing, etc.—better and more economically than either steam or electricity.



Novo Hoisting Outfit.

Send for Novo Equipment Catalog

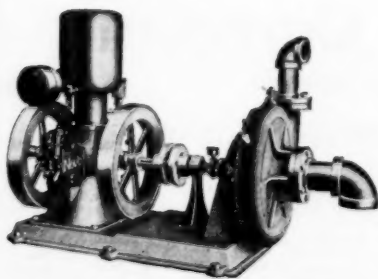
and give us the opportunity of convincing you. It will be your benefit as well as ours. At least do your business the favor of looking into this proposition.

NOVO ENGINE COMPANY, Clarence E. Bement
233 WILLOW STREET, LANSING, MICH. Sec'y and Gen'l Mgr.

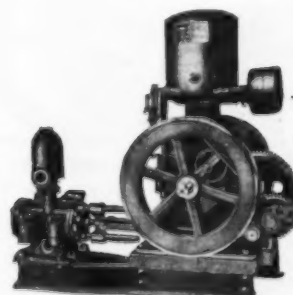
We can offer an attractive contract to dealers in new territory.
Write us for details.

**NO TANK
NO FAN
NO FREEZING
TROUBLE**

Novo Hoisting and other outfits are built for hard service. The gears are large and strong, bearings are wide—everything is made in the way that long experience has proved to be the best.



Novo Engine and Centrifugal Pump Direct-Connected.



Novo Engine Direct-Connected to Pump.



Incandescent Lamps

Unexcelled for Life, Brilliancy or Uniformity

Motors and Dynamos

WRITE FOR PRICES

Kentucky Electrical Co., Inc., Owensboro, Ky.

MOLONEY TRANSFORMERS

MOLONEY ELECTRIC CO., ST. LOUIS, U. S. A.

WINDSOR, ONT., CANADA.

Increase Your Output and Save Power

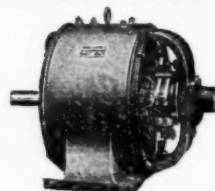
Equip your factory with up-to-date

ADJUSTABLE SPEED MOTORS

for driving machine tools, etc. Wide adjustment and constant speed. Cleaner, lighter and healthier operating conditions. Write for Bulletin 371M.

THE TRIUMPH ELECTRIC CO.

CINCINNATI, OHIO



HEADQUARTERS

FOR ALL THINGS ELECTRICAL

At a Little Less Than You Pay Elsewhere Prompt Service

LEE ELECTRIC COMPANY

BALTIMORE, MD.

Robbins & Myers "STANDARD" Motors

Direct Current 1-30 to 20 H. P., Alternating Current 1-30 to 1/4 H. P., Small Generators, Motor-Generators, Dynamotors, etc.

THE ROBBINS & MYERS COMPANY

SPRINGFIELD, OHIO, U. S. A.

Manufacturers

WE HAVE MOVED

TO OUR NEW BUILDING
221-3 SOUTH SALISBURY STREET
RALEIGH, N. C.

AND AWAIT YOUR ORDERS
CAROLINA ELECTRICAL COMPANY

The Western Gas Construction Co.
FORT WAYNE, IND.

"Ionic" Lamp Posts

FOR ELECTRICITY OR GAS,
Write for Particulars.

Aluminum Company of America

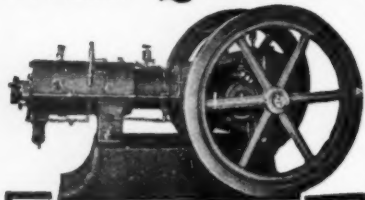
Formerly The Pittsburgh Reduction Co.

PITTSBURGH, PA.

ALUMINUM

Electric Conductors, Ingots, Bars, Plates,
Castings, Tubes, Sheets, Etc.

THE QUINCY



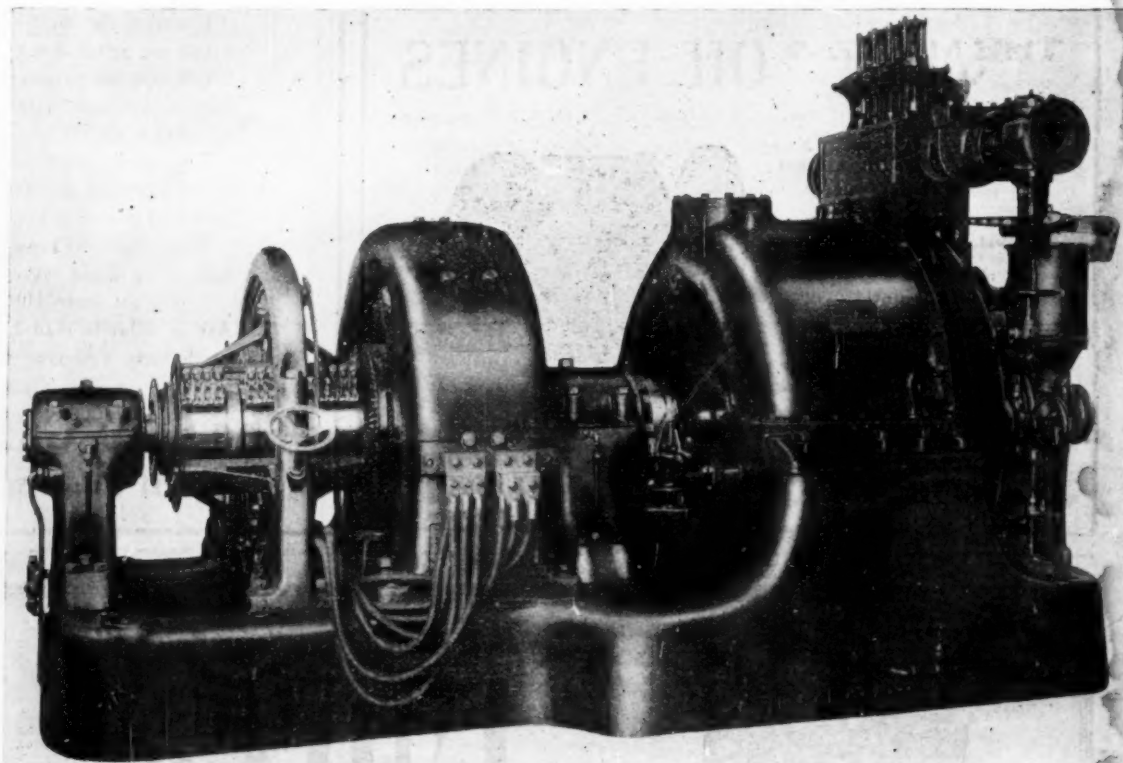
Gasoline Engine

is dust proof and odorless, draws pure air into the building and expels all engine fumes and gases from the building.

Stationary and portable 1 1/2 to 30 H.P., tractors, rock drilling outfits, fruit spraying outfits.

Southern Territory Available.

QUINCY ENGINE CO.
Quincy, Penna.



The above illustration shows a 300 kw. mixed pressure Curtis Turbine at Bridgeport Brass Company operating on exhaust steam from roll and shafting engines.

This turbine, with suitable motors, made an overloaded and blower-forced boiler plant adequate with one boiler to spare.

It has given and is giving perfect satisfaction.

General Electric Company

Largest Electrical Manufacturer in the World

Principal Office: Schenectady, N. Y. Sales Offices in the following Cities:

Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
Boise, Idaho.
Boston, Mass.
Buffalo, N. Y.
Butte, Mont.
Charleston, W. Va.
Charlotte, N. C.

Chattanooga, Tenn.
Chicago, Ill.
Cincinnati, O.
Cleveland, O.
Columbus, O.
Dayton, Ohio.
Denver, Col.
Detroit, Mich.
(Office of Sol'g Agt.)

Erie, Pa.
Indianapolis, Ind.
Kansas City, Mo.
Los Angeles, Cal.
Louisville, Ky.
Macon, Ga.
Memphis, Tenn.
Milwaukee, Wis.
Minneapolis, Minn.

Nashville, Tenn.
New Haven, Conn.
New Orleans, La.
New York, N. Y.
Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Ore.
Providence, R. I.
Richmond, Va.

Rochester, N. Y.
Salt Lake City, Utah.
San Francisco, Cal.
St. Louis, Mo.
Seattle, Wash.
Spokane, Wash.
Springfield, Mass.
Syracuse, N. Y.
Youngstown, Ohio.

MAKING NICKEL FLAKE

$\frac{1}{25000}$ Inch Thick

FOR THE EDISON STORAGE BATTERY

LETTER No. 4.

A learned professor remarked recently, after spending a half day inspecting the various processes and special machines it was necessary to devise for the manufacture of the EDISON STORAGE BATTERY, "A person of ordinary education, entering this Plant and devoting the requisite time to a comprehensive study of the various Arts embraced herein, would emerge a finished scientist."

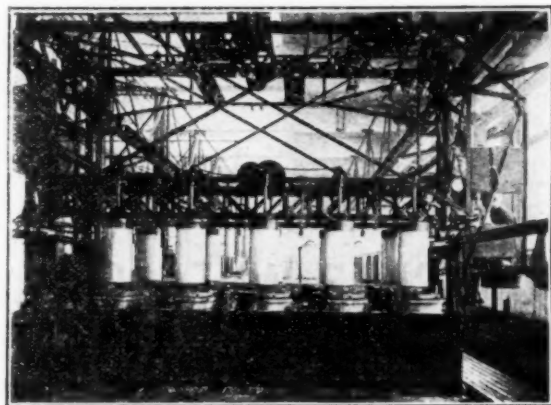


FIGURE 8.

Apparatus plating alternately nickel and copper on a special cylinder. The copper is subsequently dissolved, leaving the nickel in flakes of extreme thinness.

Think of the infinite patience and perseverance that was necessary to evolve and perfect it all!"

There are lessons here for many specialists.

You will remember in Letter No. 2, the thin nickel flake acting as conductors between the layers of nickel oxide in the positive tubes. The method of manufacture of this nickel flake is exceedingly interesting.

Very thin layers of metal can be deposited by electroplating outfits. A great many purchasers of cheap jewelry have discovered this, to their dismay. To us it proved a blessing.

In Figure 8, I show a traveling crane supporting ten metal cylinders. They are revolved by an electric motor located just above. Directly under each of these cylinders there is a large earthenware crock, containing a copper plating solution, and pure copper plates. The revolving cylinders are lowered into these crocks for a few seconds, emerging with a thin layer of copper electroplated thereon. The crane passes from you to a series of water jets, where the cylinders are washed before being lowered for a short time into another lot of crocks to receive a thin coating of nickel over the copper. They are then removed, washed as before, plunged into the copper plating bath, etc., the performance being repeated until 250 alternate layers of copper and nickel have been deposited thereon.

The composite sheet thus formed, itself only 1-64th of an inch thick, is stripped from the cylinder, the operation being shown in Figure 9. The sheets are then cut into little squares, which are placed into some other crocks containing a solution that eats away the layers of copper without attacking the nickel layers. Thus, from one such square, one hundred and twenty-five layers of nickel are obtained, each being about one twenty-five thousandth of an inch thick.

The product is then washed carefully, dried and sent to the tube loading machines which I told you of before.

The Inspection Department of the Edison Storage Battery Company is exceedingly thorough. Each individual part must undergo careful scrutiny before and after combining with other parts. All that do not grade "perfect" are scrapped.

When a complete cell has been made and filled with solution—caustic potash, distilled water and lithium—it is sent to the Forming Room, where it is charged and discharged three times. The electrical characteristics are carefully noted, and if, as a complete cell, it does not come up to the high standard which Mr. Edison has set, it is rejected. Every cell that goes out has therefore demonstrated its fitness.

It is quite evident to everyone, after reading even these partial descriptions of the manufacture of the EDISON STORAGE BATTERY, that it costs a great deal to produce. That is the reason why the price of the EDISON BATTERY is higher than the price of other batteries. As far as the initial outlay is concerned, this obtains. But it has been found by those who have

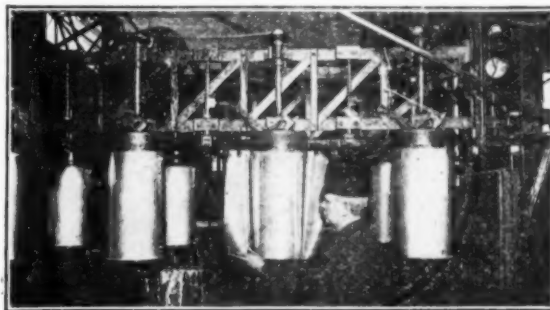


FIGURE 9.

Stripping the 1/64-inch thick, 250-layer sheet from cylinder.

used them that the EDISON BATTERY is an INVESTMENT and NOT A RUNNING EXPENSE.

Respectfully,
MILLER REESE HUTCHISON,
Chief Engineer to Mr. Edison,

(To be continued next week.)

Edison Storage Battery Company
151 Lakeside Avenue, ORANGE, N. J.

Dictated to the Edison Dictating Machine

**Most
Widely
Advertised
Line of Fans
on the
Market.**

Your customers will read the strong selling ads. on "Standard" fans in the Saturday Evening Post. Watch out for them yourself and watch out for the demand they create—right here in your store.

**Robbins & Myers
"STANDARD" Fans**

are built by *specialists* who have made fan building a 17 year study. "Standard" fans are built strong and give life-long satisfaction. They are noiseless and require practically no attention.

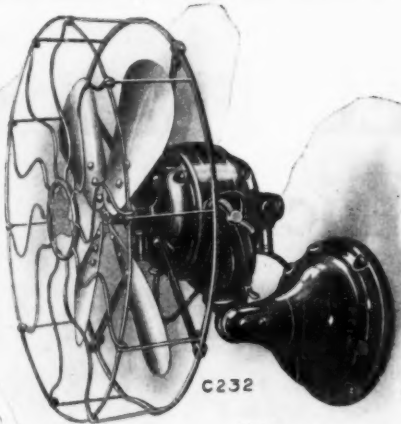
We make a fan for every purpose and can fill your order immediately. Special orders executed in short time.

Every size and style, direct or alternating.

Write for the best dealer's contract ever given.

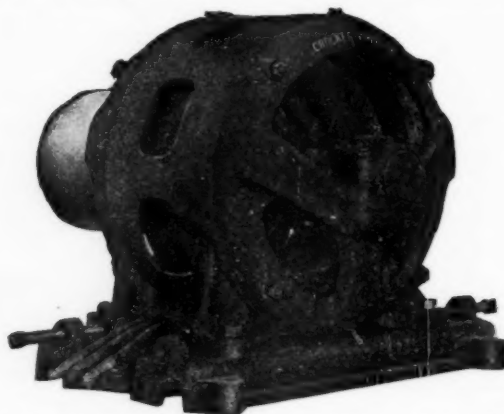
**THE ROBBINS & MYERS COMPANY
SPRINGFIELD, OHIO**

BRANCHES: New York Chicago Boston Philadelphia St. Louis Rochester
We also manufacture small motors both D. C. and A. C. for all purposes.



Crocker-Wheeler Company
not only makes
Good Motors and Generators
but it
Always Makes Good

For twenty-four years the Crocker-Wheeler Company has made motors and generators and has made good in every way.

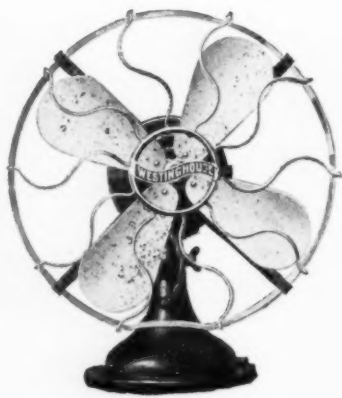


C-W SQUIRREL CAGE INDUCTION MOTOR

Send for our Bulletin 146D for full details.

CROCKER-WHEELER CO.

Ampere, N. J., Birmingham, Boston, Chicago, Cleveland, Denver, Detroit, Newark, New Haven, New York, Philadelphia, Pittsburg, San Francisco, Syracuse.



**The Drawn Steel Frame
Westinghouse Fan
Motors**

combine minimum weight with maximum strength. They are economical in current consumption, efficient in operation and pleasing in appearance.

The patented swivel and hinge joint of Westinghouse Steel Frame Fans gives the widest possible range of vertical and horizontal adjustments. They can be tilted

forward 15 degrees, backward 90 degrees and rotated 340 degrees.

You can convert Westinghouse Steel Frame Desk and Bracket Fans from desk to bracket by simply loosening and tightening a wing nut. No tools are necessary, nor the use of a Trunnion or adapter, and the joint holds.

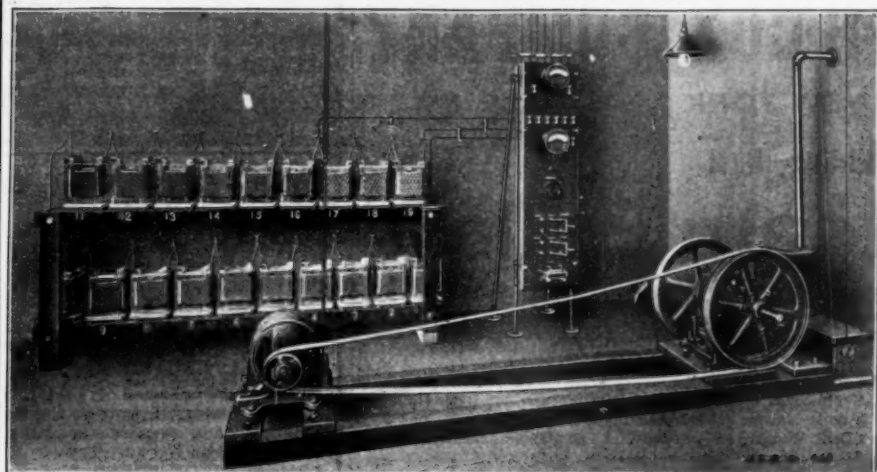
Every style of fan is included in the Westinghouse Line—Desk and Bracket, Residence, Telephone Booth, Exhaust, Ceiling, Floor and Counter Column. Have you seen our contract to dealers? Ask nearest office about it.

Our 1912 Fan Motor Circular No. 1165 describes the complete line in full. Get a copy at once and place your order early.

Westinghouse Electric & Manufacturing Co.

Sales Offices in 45 American Cities

East Pittsburgh, Pa.



Use Electric Light

If you are not near a Central Station you can now install your own electric lighting plant at small expense. It requires little space and with the use of a storage battery gives you a full twenty-four hour service by only an occasional running of the engine.

The "Chloride Accumulator"

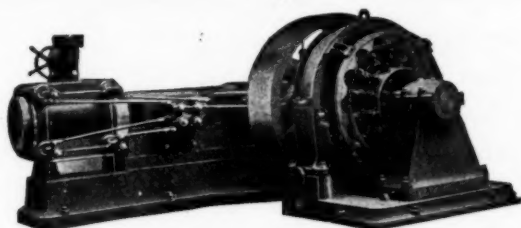
used with the isolated electric lighting plants of this company is the same battery used by the large Central Stations, Electric Railways, Telephone and Telegraph Companies, etc. You will find complete information in "Hand Book HL". Write the nearest office for a copy.

THE ELECTRIC STORAGE BATTERY CO.

1888 PHILADELPHIA, PA. 1912

Atlanta Sales Office, Candler Bldg.

New York Chicago Cleveland Denver Los Angeles San Francisco
Boston St. Louis Toronto Detroit Seattle Portland, Ore.



WITH EVERY NEW DEVELOPMENT requiring power equipment, the question of suitable engines and generators is one worthy of most careful consideration.

For upon the successful operation of the power plant depends largely the success of the undertaking.

We have to offer a compact, simple and economical engine of the four-valve type, which today is doing most satisfactory service in a large percentage of isolated plants.

It especially appeals to the Engineer who realizes that the production of power at a minimum of cost will contribute largely to the dividend paying power of the operation.

We also manufacture a complete line of Direct and Alternating current generators, Motor-Generator and Balancer Sets, and are in position to supply a complete unit of unusual worth.

Write us for more detailed information and Bulletins.

Ridgway Dynamo & Engine Co.
Ridgway, Pa.

Manufacturers Record, the Medium for Machinery Advertisements.

HARTLEY BOILER WORKS

BUILDERS OF
HIGH-GRADE BOILERS

Stand Pipes, Self-Supporting Stacks, Tanks, Towers, all kinds of Structural and Plate Iron Work, Boiler Fronts, Grate Bars, Kiln Wheels, all kinds of Castings made to order.
MONTGOMERY, ALA.

Schofield Engines and Boilers

We make a specialty of RETURN TUBULAR BOILERS and ENGINES. They are particularly adapted for Saw Mills, Oil Mills, Cotton Ginning.

For Immediate Shipment, Portable Boilers and Engines, which are built for heavy duty. If you are contemplating the purchase of new Boilers and Engines, it will pay you to write us.

We are manufacturers of Boilers, Engines, Towers, Tanks, Standpipes, Self-supporting Steel Stacks, Plate and Sheet Iron Work, Saw Mills, etc.

WRITE US TODAY FOR ILLUSTRATED CATALOG

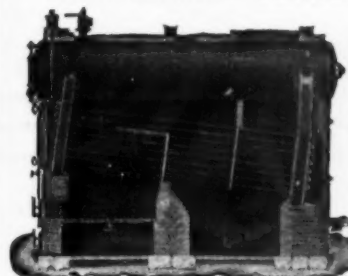
J. S. SCHOFIELD'S SONS CO., - Macon, Ga.

BRANCH OFFICE: 307 W. Trade Street, Charlotte, N. C.

The Modern Boiler For The Up-To-Date Plant

GEARY WATER TUBE BOILER

The construction of the headers and drums in the "Geary" is such as to permit of unusually large water areas, which reduce to a minimum the usual contraction of circulating areas so common in many types of water tube boilers. This feature permits the "Geary" boiler to be



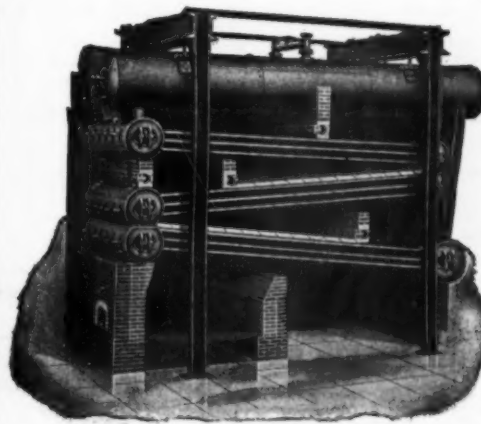
readily forced to maximum capacity and avoids the unsteady water level under forced firing so commonly experienced. The arrangement of drums permits a large liberating surface and steam storage capacity. If you want a boiler, you need a "Geary." Write for booklet.

OIL CITY BOILER WORKS

OIL CITY, PENNA.

New York Philadelphia Pittsburgh Chicago Boston
Denver S. L. City

NO EXPERIMENT VOGT WATER TUBE BOILER



You are not buying an experiment when you get one of our boilers. It was proved that it is unquestionably without an equal as a steam producer. Free from objections common to the general run of boilers. Constructed by expert workmen of

the very best materials. Safe, sound and efficient. We will gladly go into details with all interested—prospective plants and those wanting to increase their present boiler efficiency.

Henry Vogt Machine Company

Louisville, Ky.

THE BABCOCK & WILCOX COMPANY

85 Liberty Street, NEW YORK

Babcock & Wilcox—Stirling—Rust

Water Tube Steam Boilers

STEAM SUPERHEATERS MECHANICAL STOKERS

WORKS—BAYONNE, N. J. BARBERTON, OHIO

BRANCH OFFICES

Atlanta.....Candler Building	Denver.....435 Seventeenth St.	Pittsburgh.....Farmers' Deposit Bank Building
Boston.....35 Federal St.	Havana, Cuba.....116½ Calle de la Habana	Portland, Ore.....Wells-Fargo Building
Chicago.....Marquette Building	Los Angeles.....American Bank Building	Salt Lake City.....313 Atlas Block
Cincinnati.....Traction Building	New Orleans.....Shubert Arcade	San Francisco.....99 First Street
Cleveland.....New England Building	Philadelphia.....North American Building	Seattle.....Mutual Life Building

THE WALSH & WEIDNER BOILER CO.
MANUFACTURERS OF HIGH-GRADE

BOILERS

CHATTANOOGA, TENN.

Write us for Prices before placing your order

LOOKOUT BOILER & MFG. CO.

MANUFACTURERS OF
PORTABLE AND HORIZONTAL TUBULAR
BOILERS

STACKS, CASTINGS, TANKS, Etc.
CHATTANOOGA, TENNESSEE

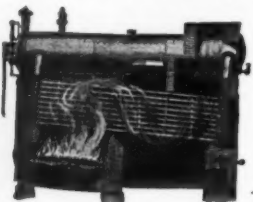
BOILERS TANKS STACKS

Pumps, Heaters, Injectors, Engine
Supplies, and repairs for Mills,
Hotels, Public Works. Try
LOMBARD IRON WORKS, Augusta, Ga.

E. KEELER COMPANY, Established 1864

Ask for New Catalogue.

WILLIAMSPORT, PA.



WATER TUBE BOILERS

All Wrought Steel Construction.

TUBULAR AND INTERNAL FURNACE
BOILERS

BOSTON NEW YORK PHILADELPHIA PITTSBURGH CHICAGO RICHMOND

THE GEM CITY BOILER CO. DAYTON, OHIO

Manufacturers of TUBULAR BOILERS of every description

STEEL TANKS any size and for any purpose

RUSSELL WATER SOFTENERS
AND GENERAL STEEL PLATE CONSTRUCTION

EASTERN REPRESENTATIVE

MORTON McI. DUKEHART, 100-102 W. Fayette St., BALTIMORE, MD.

THE CASEY-HEDGES CO. Chattanooga, Tenn.

Water Tube
Marine
Return Tubular

BOILERS

SPECIAL PLATE AND TANK WORK

Offices—No. 719 Hennen Bldg., New Orleans, La.; Praetorian Bldg., Dallas, Texas.
Main Offices and Works—Chattanooga, Tenn.



COVER YOUR STEAM PIPES

with our Asbestos coverings. Thousands saving money by
using them. We will give you a covering for your partic-
ular needs. Contract work a specialty. Let us explain.

SOUTHERN PIPE COVERING CO. - - RICHMOND, VA.
Asbestos Pipe Covering, Roofing and Packing.

Inspects boilers and
fly wheels to guard
against explosion.

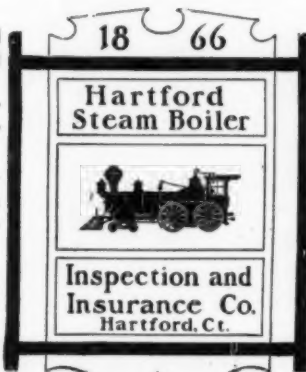
Insures property
against this hazard.

Also against Life
and injuries to per-
sons.

Makes specifications
for new steam plants.

Inspection Bureaus at

BALTIMORE, MD., LAW FORD & McKIM, General Agents
PHILADELPHIA, PA., CORBIN & GOODRICK & WICKHAM, General Agents
ATLANTA, GA., W. M. FRANCIS, Chief Inspector
NEW ORLEANS, LA., P. F. PESCU, General Agent



Alters old ones in
the interest of econ-
omy.

Maintains over 200
inspectors throughout
the country.

Over 100,000 steam
boilers under super-
vision.

Assets Jan. 1, 1912,
\$5,045,874.60.

THE
Blake-Knowles
Open Feed-
Water Heater
combines

Oil Separator
Heater
Purifier
Filter and
Automatic Receiver

reducing Space, Piping, Valves and Fittings required
for its installation and Fuel and Water consumed and
Attention required after it is in operation.

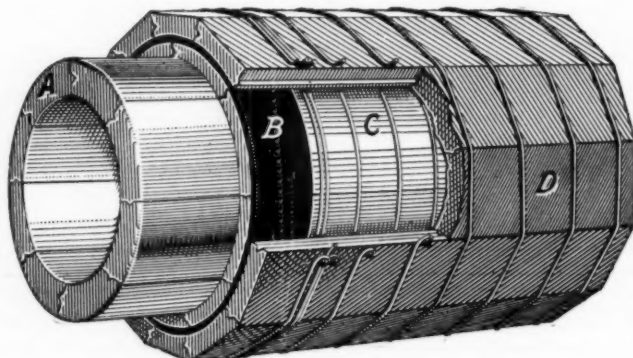
The only thing it increases is the life of your steam
plant. The How and the Why is explained in Bulletin
BK847-29 and a post card will bring it.

The Blake & Knowles Steam Pump Works

115 Broadway, New York

Works: East Cambridge, Mass.

B130.1



A—Inner Shell, 2 inches thick.
B—Asphaltum Packing.

C—Dead Air Space.
D—Outer Shell, 1 inch thick.

Cover Your Steam Pipes

WITH WYCKOFF'S IMPROVED

CYPRESS COVERING

Made of Gulf Cypress, the wood eternal

Not affected by wet and dry conditions common to
steampipe trenches. Will not rot. Lasts twice as
long as Pine Casing. Absolutely water and steam
tight. Each shell is wound with heavy galvanized wire.
Coated all over with the best known preservative—
Hydrolene B.

Let us answer your questions and tell you all about it.
Booklet on request.

A. WYCKOFF & SON COMPANY
Elmira, N. Y.



HOPPES STEAM SEPARATORS

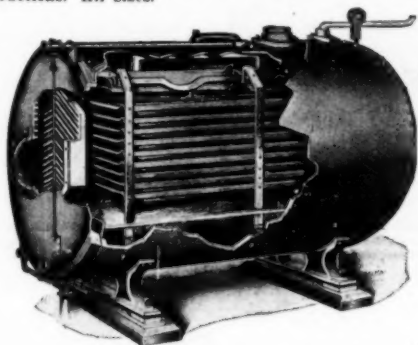
Will not only deliver 99% dry steam to your engine, but their large receiver capacity will take care of sudden flushes of water and afford ample steam storage for use during sudden "peak loads." All sizes and types to suit requirements.



HOPPES FEED-WATER HEATERS

Conserve the Fuel Pile—Protect Boilers
and Save the Dollars

The extra large heating and lime-catching surface, and the method of bringing the steam into direct contact with the water flowing in thin films, are the reasons why Hoppes Heaters give the highest efficiency and economy where others fail. Steel and Cast Iron Constructions. All sizes.



HEATER—CAST IRON CONSTRUCTION

Live Steam Feed-Water Purifiers—Oil Eliminators—Cast Iron Exhaust Heads

ILLUSTRATED CATALOGS FREE

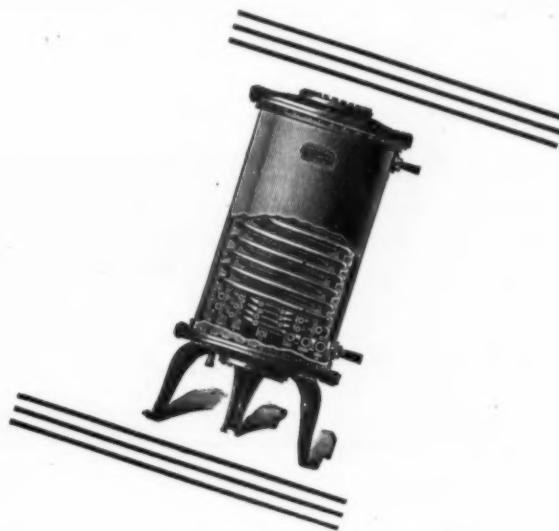
The Hoppes Mfg. Co.,

97 LARCH ST.
SPRINGFIELD, OHIO

There Is No Question Now About

the advisability of a feed-water heater, but there is a question about which kind to use. Many today are glad they tried

A NATIONAL FEED-WATER HEATER



We would like to make you glad, too.
May we send one for trial?

The NATIONAL PIPE BENDING CO., 97 Lloyd Street New Haven, Conn.

Boiler Capacity Enlarged By Installing a FOSTER SUPERHEATER

Look at it in another way: In addition to saving fuel and steam, our superheater will enlarge your boiler capacity without increasing the number of boilers or adding to fuel consumption. In a crowded plant this is a great advantage.

Six boilers equipped with superheaters will do the same work as seven not equipped.

We will gladly go into the whole subject with any interested power plant owner.

POWER SPECIALTY CO.

111 Broadway, New York

Southern District Office, Brown-Marx Building
Birmingham, Ala.

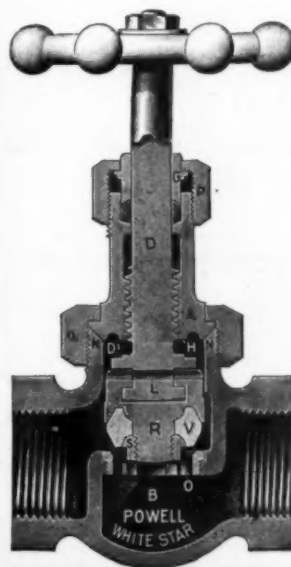


The Otis Tubular Feed Water Heater Oil Separator and Purifier

Is guaranteed to deliver the water to the boiler at boiling temperature (210 to 212 degrees). It will also extract the oil from the exhaust, so that the steam after passing through the heater may be used for other heating purposes and the condensed water returned to the boiler without any additional elimination.

Give the Otis a trial, and if you don't find it satisfactory we will pay the freight and carriage both ways.

The Stewart Heater Co., 3 Norfolk Ave. Buffalo, N. Y.



The metal used for the disc of the

Powell White Star Valve

is hard and close grained. We call it white "Powelium" bronze, on account of its silver color, and is just as valuable as silver from its valve standpoint.

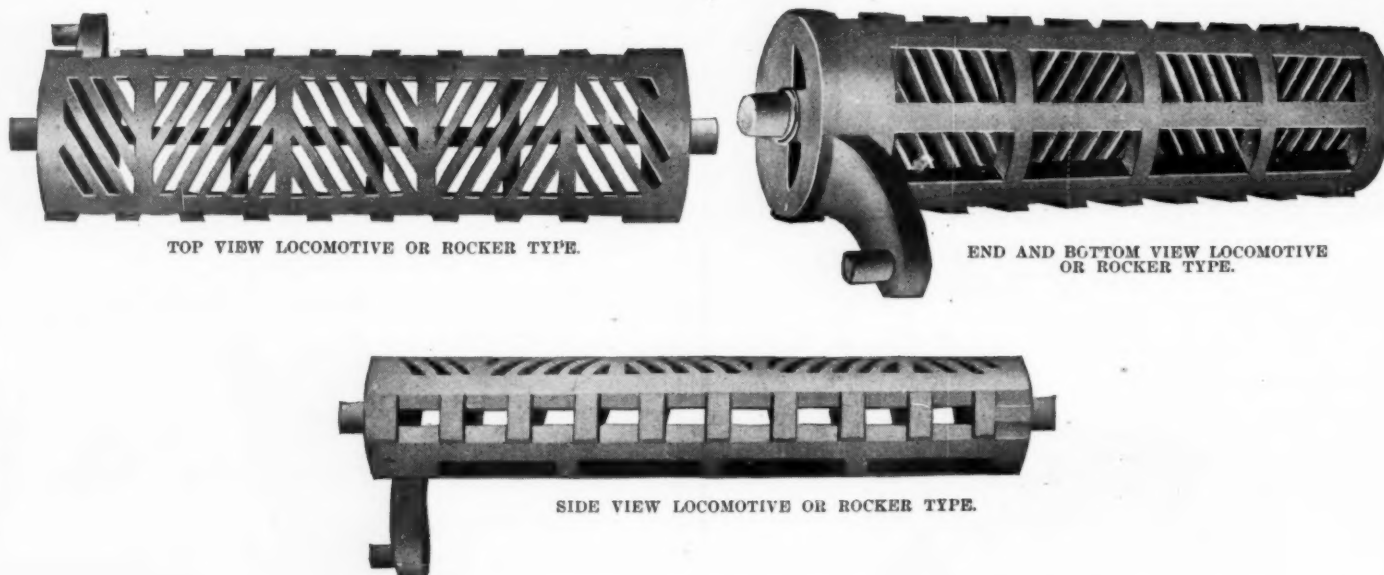
It will resist corrosion longer than ordinary steam bronze compositions, and will outwear many times the ordinary steam bronze composition valve discs. Don't overlook the fact that it has TWO wearing faces.

All jobbers can supply you.

THE WM POWELL CO.



DEPENDABLE ENGINEERING SPECIALTIES
CINCINNATI



Steam Users Are Gradually Appreciating

the saving, the convenience, and general satisfaction of

THOMAS ELLIPTIC GRATE BARS

Numerous large plants are gradually installing them and never yet have we heard a cry of dissatisfaction. If they were not superior to other grates and grate bars, we could not produce so many letters of testimony dealing with different phases of superiority and satisfaction and each one brimful of praise and approbation. We will send copies of these letters to any one interested.

EVERY MODERN POWER PLANT SHOULD USE THEM BECAUSE

THEY	{	are self-cleaning	make no slag clinkers	prevent trouble
		save fuel	will not break	will not sag or warp
		make more steam	last longest	are fully guaranteed

Questions promptly answered.

Let us hear from you.

Thomas Grate Bar Co.

Birmingham, Ala.

Branch: Valdosta, Ga.

These Are The Right Two



Trade Mark Registered.

Approved and endorsed by the Associated Factory Mutual Fire Insurance Companies for use in Factories, Mills, Warehouses and wherever a light, durable, economical and dependable hose is required. "TUEBOR" Hose is the accepted standard.



"GIBRALTAR" PNEUMATIC TOOL HOSE is built for hard usage and long service. It has a special protecting cover, which enables it to withstand the effects of being dragged over rough floors and sharp edges of metal. It is practically oil and dust proof. It will not separate or weaken.

Samples and prices on both lines will be sent upon request.

N. J. CAR SPRING & RUBBER CO.

Established 1858

JERSEY CITY, N. J.

Agents in All Principal Cities.

LINDSTROM'S MACHINE WORKS

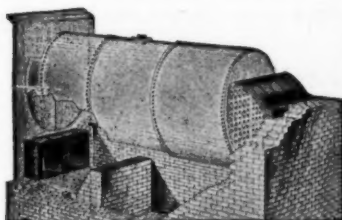
MANUFACTURER OF

**CORLISS VALVE STEAM TRAPS.
STEAM SEPARATORS.
EXPERTS IN REBORING STEAM
ENGINE CYLINDERS, PUMPS AND
AIR COMPRESSORS.**

TURN OFF AND CROWN ANY SIZE FLY-
WHEEL ON ENGINE SHAFT.

*Pig Barometer and Catalog Sent You
by Asking.*

200 SOUTH THIRD ST.
ALLENTOWN, PA.



**"TAYLOR MADE"
FIRE CLAY PRODUCTS**

The life of our arches and jams is
several times that of cast iron liners.
Send for descriptive matter.

The Chas. Taylor Sons Co.
CINCINNATI, OHIO

West Va. Fire Clay Mfg. Co.

FIRE BRICK AND CLAY

Fire Brick, Ladle Brick, Paving Brick, Building Brick, Cupola Blocks, Paving
Block, Sewer Pipe and Flue Linings, Ground Fire Clay

Diamond Bank Building

PITTSBURG, PA.



"Sirocco"

Heating and
Ventilating
Fans

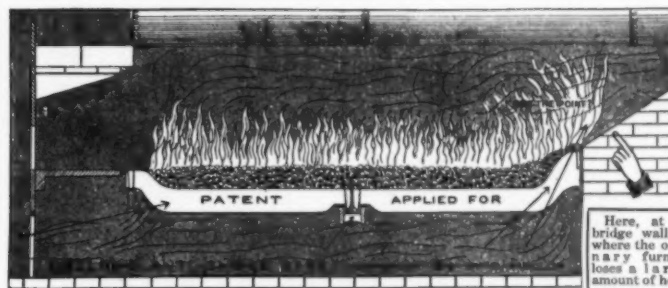
Installation for Factory Heating and Ventilating.

can be installed in confined spaces which would preclude
the use of any other type.

Bulletin No. 284-MR should be in your reference files.

AMERICAN BLOWER COMPANY
DETROIT, MICH.
U. S. A.

DO YOU THINK WE WOULD GUARANTEE THESE BARS



if we were not sure that by their use in your furnace you
would be relieved of the smoke nuisance, and get an increase
of from 15 to 20% in your boiler capacity, besides saving at
least 12% of your fuel? We know that these results can be
obtained, because present installations are demonstrating
it every day. We do guarantee these results. All we ask
is a 28 days' trial, and if we are mistaken, you don't owe
us a cent.

Mellor Furnace Engineering Co., 608 Chestnut St., Philadelphia, Penna.

The Green Fuel Economizer Co.

MATTEAWAN, N. Y.

Engineers; Builders of Green's Fuel Econ-
omizers, Fans, Blowers and Exhausters,
Steam Air Heater Coils, Waste Heat Air
Heaters, Mechanical Draft, Heating and
Ventilating and Drying Apparatus, Draft
Dampers and Engines.

SPRAGUE

**CANNING MACHINERY
COMPANY.**

222 N. WABASH AV. CHICAGO, ILL.

A small defect
may cause an
explosion if not
repaired in time
INSURE
YOUR
STEAM
BOILERS
Such defects
can be found
only by a
thorough in-
spection

Maryland Casualty Co.

Baltimore and North Streets
BALTIMORE

Surplus and Reserves for Policyholders over
\$5,500,000.00

Our large corps
of inspectors are
men of long
experience and
ability
AGENTS
EVERYWHERE
Inspections
made regularly,
promptly and
thoroughly

Herbert F. L. Allen

Special Representative

HYDREX FELT & ENGINEERING CO.
DETROIT STOKER CO.
THE OPALUX CO.
THE BLAISDELL MACHINERY CO.

Waterproofing and Insulating Felts,
Roofings, Opalux Reflectors, Detroit
Automatic Stokers, Vacuum Cleaning
Machinery and Air Compressors.

312 Colorado Bldg., Washington, D. C.

KILLIAN FIRE BRICK WORKS

KILLIAN, S. C.

Standard Fire Brick. Special Shapes
on Order.

LOCOMOTIVE TILES.

**MT. SAVAGE
FIRE
BRICK**

Brands:

**MT. SAVAGE
REFRACTO
M. S. A.
CARBURTER**

Capacity 20,000,000 Per Year

Union Mining Co.

OFFICE AND WORKS:

MT. SAVAGE, MD.

LOUISVILLE FIRE BRICK WORKS

INCORPORATED

HIGH-GRADE FIRE BRICKS

P. O. HIGHLAND PARK, KY.

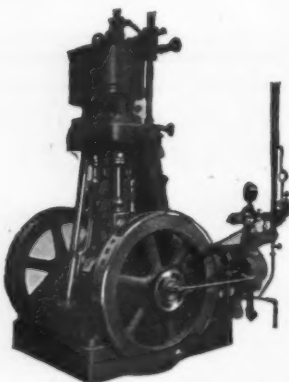
YORK

VERTICAL SINGLE ACTING ICE MACHINES



Made for steam or belt drive—single cylinder 1/2 to 6 tons, double cylinder 8 to 17 tons. Bulletin 42.

For horizontal double acting machines, 10 to 500 tons, Bulletins 15 and 45. Absorption plants, all sizes, Bulletin 22.



Made for steam or belt drive—single cylinder 1 1/4 to 3 tons, double cylinder 6 to 30 tons.

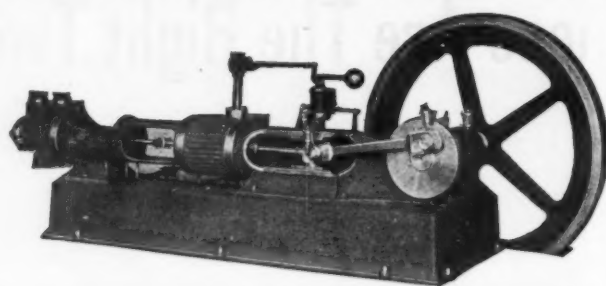
YORK MANUFACTURING CO.

Largest Ice Machine Manufacturers in the World.

Main Office and Works:
York, Pa.

General Western Office:
Monadnock Block, Chicago.

BRANCHES in Boston, New York, Philadelphia, Pittsburgh, Atlanta, Cincinnati, St. Louis, Houston, Los Angeles, Oakland, Seattle.



Workmanship a Chief Factor

THE ABSORPTION

ICE MACHINE

No particular feature is solely the cause of the gratifying success our Absorption Ice Machine has reached, but one of the chief factors is workmanship. It is of the highest class. All parts carefully designed and made accurately to gauge, insuring duplication on very short notice. All valves and fittings are of the very highest standard. We want to hear from prospective ice manufacturers, as well as present manufacturers, who want to raise their profits to the maximum. We have something especially interesting in this connection to tell them. As a preliminary, let us send catalogue.

Machines of any
capacity . . .

Breweries, . . .
Packing Houses, .
Cold Storage Plants,
Ice Factories, Etc. .

Henry Vogt Machine Co.

LOUISVILLE, KY.

OUR ICE MACHINERY

Makes Clean, Clear, Pure Ice.
Does it regularly and economically.
Let us tell you about it.

COLUMBUS IRON WORKS CO.

Absorption Ice Machinery

COLUMBUS, GA.

We also make all sizes and kinds
of Wrought Iron Pipe Coils and
Bends, Valves and Fittings.

LET US ESTIMATE

REFRIGERATING AND ICE MAKING MACHINERY

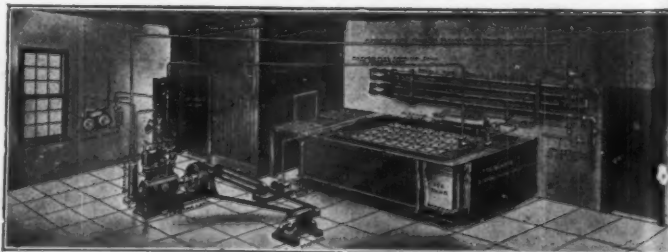
We have built and installed more than 1500 successful plants and know that we can satisfy you. Our new DeKalb type machine embodies the fruit of our experience and retains the good points of our former models. We call particular attention to our Tandem connected rig—saves room, saves power, saves oil, saves attendance. We build machines for any kind of drive and install them under an included guarantee. Be sure to get our catalogue and estimates. In writing state class of work to be done.

The Creamery Package Mfg. Company



REFRIGERATING MACHINE

Office and Works
DE KALB, ILL.



REMINGTON ONE-TON ICE PLANT

Many of these machines are in operation in the SOUTH in Mills and other Manufacturing Establishments to supply ICE for local requirements. They can be run from line shaft at small expense, and will soon pay first cost. Machines of any capacity for MAKING ICE or for the COOLING OF COLD STORAGE ROOMS, LIQUIDS OR DRINKING WATER. Over 20 years on the market. Illustrated Catalogue and Reference List upon request.

REMINGTON MACHINE CO.

WILMINGTON, DEL.



"The Best
is the
Cheapest"

**Our New Improved
Ammonia
Compressors**

contain all the latest and most desirable features for mechanical refrigeration combining greatest strength, durability and efficiency.

IN STOCK — Superior Ammonia Fittings, Valves, Packing-Filtering Material and supplies of all kinds for Refrigerating and Ice Making Plants. Manufacturers of Strictly High-Grade REFRIGERATING AND ICE MAKING MACHINERY, WATER COOLING TOWERS AND STEAM BOILERS, ICE CANS WHICH CANNOT LEAK, TANK AND STACK WORK. Complete Line of AMMONIA FITTINGS AND VALVES. We Solicit Your Orders.

The Ruemmeli-Dawley Manufacturing Company
Engineers and Contractors
3900 Chouteau Avenue
St. Louis, Mo.

BRANCH OFFICES:
New York Office: Hudson Terminal. Cleveland Office: Rockefeller Bldg. Oklahoma: McAlester.

ICE AND REFRIGERATING PLANTS

We design and equip from start to finish. If it's an old plant and not as prosperous as it might be, consult us, for it is a part of our business to find the weak spot and remedy it. We know what is being done elsewhere, and can give you the benefit of our experience.

TAIT-NORDMEYER ENGINEERING CO.
Liggett Bldg. St. Louis, Mo.

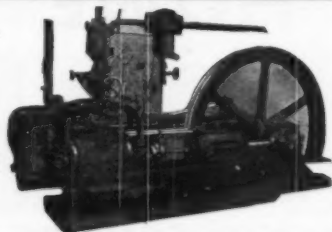
THE VILTER MFG. CO.

832 Clinton St., MILWAUKEE, WIS.

Ice-Making and Refrigerating
Machinery

CORLISS ENGINES

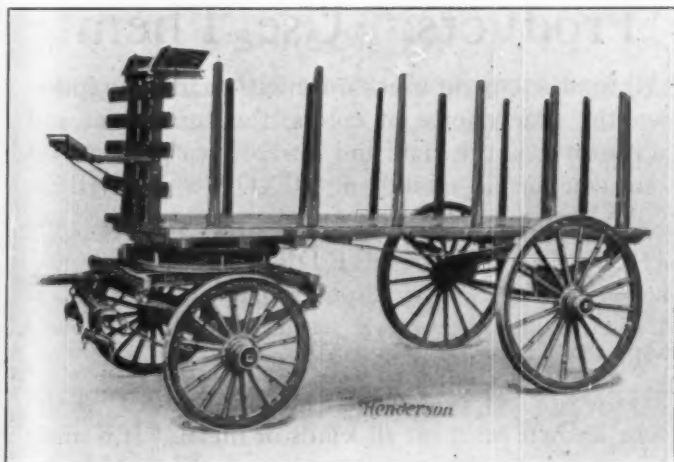
Brewers' and Bottlers'
Machinery



FLAT-TOP FUEL CO.

Mine Owners and Shippers Exclusively of
GENUINE POCAHONTAS SMOKELESS COAL
MANUFACTURERS' STANDARD
Pocahontas Furnace and Foundry Coke BLUEFIELD, WEST VIRGINIA

NEED A DRAY?



TRY A HIGH-GRADE HENDERSON

They Look Better, Last Longer, and the Prices are Right

HENDERSON Rack Front Dray
HENDERSON Box Front Dray
HENDERSON Platform Spring Dray
HENDERSON Dead Axle Dray

HIGH QUALITY is our
Entering Wedge
HENDERSON Two-horse Dray
HENDERSON One-horse Dray
HENDERSON Cut-under Truck
HENDERSON Coal Wagons
HENDERSON Ice Wagons
HENDERSON Dump Carts

The HENDERSON LINE is complete
Ask for Photo Plates of Drays
or full Catalogue, if interested.

Established
1865

HENDERSON WAGON WORKS, Inc.

Henderson, Ky.

LYNN FILTERS

PURE WATER

Residences,
Apartment Buildings,
Hotels, Cafes,
Institutions.

Special Plants for Ice
Factories.

Laundry Filters.

Estimates Furnished.

The Lynn-Superior Co., Cincinnati, O.
Branch—100 W. Fayette St., Balto., Md.

INTERNATIONAL FILTER CO.

Filters

For All Purposes

17th St. and Wabash Ave., Chicago, U. S. A.

IN THE SOUTH



Coosa Mfg. Co., Piedmont, Ala.
6000 Gals. per Hour Softener.

We build Filters and Softeners for
any purpose and of any capacity.

"A Laborer can operate them"

American Water Softener Co.
1019 Chestnut Street. PHILADELPHIA

Gravity and Pressure Filters

THE NEW YORK CONTINENTAL JEWELL FILTRATION CO.

35 South Dearborn St., CHICAGO. 15 Broad St., NEW YORK.

OWNERS OF THE NEGATIVE HEAD FILTER PATENT

LICENSEES: { PITTSBURGH FILTER MFG. CO. NORWOOD ENGINEERING CO.
{ ROBERTS FILTER MFG. CO. J. N. CHESTER, C. E.

ROBERTS WATER FILTERS

DURABLE, EFFICIENT
GRAVITY AND PRESSURE FILTERS

ROBERTS FILTER MANUFACTURING COMPANY, Inc.

DARBY, PHILADELPHIA, PA.

Your Inquiries are Solicited.

Licensed under Jewell Patents.

**WATER FILTERS
WATER FILTRATION PLANTS**

For Every Industrial and Domestic Use

WM. B. SCAIFE & SONS CO. (FOUNDED 1802) PITTSBURGH, PA.

SELLERS INJECTORS

—FOR—

Locomotive

AND

Stationary Boilers

Interchangeable with other forms

1600 Hamilton Street

Philadelphia, Pa.

WM. SELLERS & CO., INCORPORATED



WAGONS

Ice—Baker—Laundry—
Meat—Baggage Wagons
and Trucks of

HIGHEST GRADE

Correspondence solicited.
Send for illustrated catalogue.

KOENIG & LUHRS WAGON CO.

Established 1866

QUINCY, ILL.

Established 1866

Albany Grease

ALL LUBRICANT

NO WASTE

Clean Plant—Less Work—Cheaper Insurance

Albany Grease is absolutely a wasteless lubricant—it will not drip. Made of selected tallow so blended as to secure the lowest melting point consistent with ability to stay in the cup at the temperature of the surrounding air.

It stays on the bearings where it is needed; will not run off, over the machine and onto the floor, wasting money, creating work, dirt and danger. No sight feeds to adjust, turn on or off.

Albany Grease is equally well adapted for use on all moving parts of all kinds of machinery—it is just as valuable in one place as in another.

Try it at our expense—and see for yourself.

A liberal sample, an Albany Grease Cup and our new book, "Death to Friction", will be sent free of charge. Send your name and address.

ALBANY LUBRICATING CO.

Adam Cook's Sons, Props., 708-710 Washington St., New York.



GALENA-SIGNAL OIL CO.

FRANKLIN, PA., U. S. A.

Leading Railway Lubricating and
Illuminating Oils of America

GALENA COACH, ENGINE and CAR OILS, and SIBLEY'S
PERFECTION VALVE and SIGNAL OILS
are standard the world over.

ELECTRIC RAILWAY LUBRICATION A SPECIALTY

Guarantee Cost.

S. A. Mcgeath, President.

Expert Service

NEW PLANT UP-TO-DATE NEW MACHINERY

Rome Scale & Manufacturing Co.

ROME, GA.

MANUFACTURERS OF

SCALES AND TRUCKS

OF ALL KINDS.



ROBINSON :: OILS

YOU would not take other oils for a gift—after you had used any of the ROBINSON oils. You ought to get a sample of No. 6 Cylinder Oil—Colophine Engine Oil—one of our greases and the Booklet "Why." We'll meet you half way if you write today. Suppose you do.

Wm. C. Robinson & Son Co.

1511-17 Thames St., Baltimore, Md.

BRANCHES IN 14 CITIES

HOWE SCALES



WE MAKE A SPECIALTY
OF SCALES FOR
RAILROADS
OIL MILLS
AND FERTILIZER WORKS

Our scales contain every improvement known to modern science in the manufacture of heavy weighing machines.

HOWE SCALE CO. 341 Broadway, N. Y.

GULF REFINING CO.

—REFINERS OF—

Oklahoma and Texas

PETROLEUM

HIGH GRADE

Engine Gasoline
Kerosene
Gas Oil

Painters' Naphtha
Stove Gasoline
Fuel Oil

Paving and Roofing Asphalt

OUR KEROSENE AND GASOLINE

IS MANUFACTURED FROM
HIGH GRADE OKLAHOMA CRUDE OIL

LUBRICATING OILS

CYLINDER ENGINE CORDAGE
HIGH VISCOSITY LOW COLD TEST

**We make a Specialty of Heavy Oils
of Asphaltum Base for
Oiling Roads**

GENERAL SALES OFFICE

PITTSBURG, PA., U. S. A.

District Sales Offices

NEW YORK
NEW ORLEANS

PHILADELPHIA
HOUSTON
ATLANTA, GA.

BOSTON
TAMPA

Four Dixon Graphite Products. Use Them!

All lumber crayon users and metal markers appreciate the wide choice of colors, the convenient and uniform size, the vivid and durable marking and the one dependable quality of DIXON'S LUMBER CRAYONS. May we send you our booklet?

DIXON'S SOLID BELT DRESSING is a quick, sure and easy cure for slipping belts and it increases their pull and efficiency. Send for free sample and "The Proper Care of Belts."

DIXON'S SILICA-GRAPHITE PAINT is the best known paint for all kinds of metal. It is made for service and should not be confused with the kind that is "made to sell." Write for "Philosophy of Protective Paint."

DIXON'S PURE TICONDEROGA FLAKE GRAPHITE is known wherever there exists the necessity for lubrication. It is manufactured in many forms to meet the varied needs of engineers and all who use lubricants. Let us tell you more about it. Let us send you "Graphite as a Lubricant" and free sample.

Joseph Dixon Crucible Co.
Jersey City, N. J.



D. W. Good, Starkey, Va.

"The Tanks with a Reputation"

Water-Works Outfits

are a specialty with us.

CALDWELL

TANKS, TOWERS AND WIND MILLS

are the strongest and best made of any on the market. They will stand up under the work and not go to pieces in two or three years.

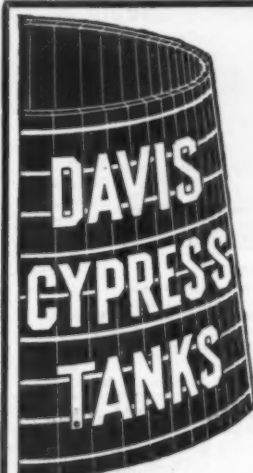
Ask for illustrated Tank and Tower Catalogue and Special Catalogue of Water-works Systems.

W. E. CALDWELL CO., - Louisville, Ky.

INCORPORATED

Tanks { Steel—Wood } Towers

Wind Mills—Pumps—Gas Engines 11



Heat and Moisture Proof

We build tanks for every purpose.

Tell us your needs, and let us give you designs and prices, both of which will appeal to you.

G. M. Davis & Son
PALATKA, FLA.

"THE STANDARD" SCALES

Almost all of the material used in the manufacturing world is bought or sold by weight. Consequently it is up to every manufacturer to have scales that can be depended on to weigh right all the time. It isn't enough to know that your scales will weigh right when they are first set up. You want to know that they are going to stay right.

"The Standard" Scales are made right, will weigh right today, tomorrow and next year.

And besides this, they are sold at a price that is right, and the price is not controlled by any "Trust." Tell us what kind of a scale you want, and we will tell you more about them, and how you can save money, and gain in quality by buying "The Standard" Scales.

The Standard Scale & Supply Co., 243-245 Water St., Pittsburgh, Pa.

BRANCHES:

CHICAGO

CLEVELAND

PHILADELPHIA

CINCINNATI

ST. LOUIS

NEW YORK

THE PETROLEUM IRON WORKS COMPANY

SHARON, PA.
Branch Offices: NEW YORK ST. LOUIS HOUSTON


Distributing Station—Consisting of Four Single—Three Double and Three Triple Compartment Cylindrical Horizontal Oil Storage Tanks on Structural Steel Supports.

FABRICATORS AND BUILDERS

Of Every Variety of Light and Heavy

SHEET METAL STRUCTURES

Tankage for all purposes—large or small. Oil Refinery Equipment—Stand Pipes—Water Towers—Guyed and Self-Supporting Smoke Stacks—Penstocks—Riveted Steel Pipe—Blast Furnaces—Hot Metal Ladles—Boilers—"Seigh" Patent Annealing Boxes—"Le-man" Counter Current Condensers—Creosoting Cylinders—"Gem" Fuel Oil Burners—"Washington" Automatic Oil and Gas Separators—Portable Receiving Tanks—R. R. Water Service Tanks—Modern Welding and Cutting Department of Large Capacity.

DOMESTIC AND FOREIGN INQUIRIES SOLICITED

INDESTRUCTIBLE SIGNS

For all country road, street, outdoor advertising, railroad, posted estates, and mill purposes. The letters are cut into iron 1-16" deep, and the finished sign has a black surface and white letter. On wood the sign shows any combination of colors. The signs are made by a new automatic machine which reduces cost one-half. Any size from 3 1/2"x6" to 12"x48". The only sign that will last a hundred years. Send for sample letter and advise for what purpose you will use sign.

INDESTRUCTIBLE SIGN COMPANY,

33 Auburn St.

COLUMBUS, OHIO


ELEVATED STEEL

TANKS TOWERS

Mechanically Correct in Design and Workmanship
Any Size, Erected Anywhere

Structural Iron Work Stand Pipes Boilers

R. D. COLE MFG. CO.
NEWNAN, GA.

WATER TOWERS ALL OVER THE U. S.

Show the class of work we have been building for the past sixteen years for water Works Plants, Railways and Sprinkler Systems.

We are the only extensive builders of Towers and Tanks having a Factory in the

PITTSBURG DISTRICT

Consequently we are in the best position to make low prices on Eastern and Southern as well as Western business.

Write for Catalog No. 2.

DES MOINES BRIDGE & IRON CO.
DES MOINES, IA.
846 Tuttle St.

PITTSBURG, PA.
803 Curry Bldg.

Preatorian Building, DALLAS, TEXAS

JULESBURG, COLO.

Established 1847
"STAR" MILLS
 Equipped with
ESOPUS STONES

 make the old-fashioned
"WATER GROUND TABLE MEAL"
 Write for prices and discount
B. F. STARR CO., Baltimore, Md.


**HAND-POWER
 RALING PRESSES**
 FOR
**COTTON MILLS
 PAPER DEALERS
 RAG and
 JUNK DEALERS**
 Manufactured by
THE SINCLAIR-SCOTT CO., Baltimore, Md.


SMITH-COURTNEY CO.
 Richmond, Va.
 Virginia and North Carolina Agents for
 the American Tool Works Co.,
 High-Class Lathes, Shapers,
 Planers, Radial Drills, Etc.

AGENTS FOR THE
Fleming-Harrisburg Engine for Electric Service
 Also full line of Engines, Boilers, Iron and
 Woodworking Machinery and Pumps. Largest
 stock of Railroad, Mine and Mills Supplies in
 the South.

Lynn-Superior Double Mixers
 Best designed and most efficient mixing
 principle for thoroughly mixing

 Dry Feeds.
 Powdered
 and Granular
 Material,
 Polish Powders
 Soaps,
 Compounds,
 Pastes,
 Greases,
 Sausage Meat
 Poultry and
 Cattle Feeds.
"Cincinnati" Type.
 Built with or without steam jacket for
 heated mixtures.
 Write us for any special Mixing or
 Blending machinery required.
THE LYNN-SUPERIOR CO., Cincinnati, O.
 Branch 100 W. Fayette St., Balt., Md.

Wire Stapline Machinery
 For Fruit Packages, Baskets, Crates
 Barrels, Butter Dishes, Boxes, etc.
 Corrugated Joint Fastener Driving
 Machinery.
SARANAC MACHINE CO.
 ST. JOSEPH, MICH., U. S. A.


**a burning hour
 100
 candle power
 Pintsch Mantle Light**
**THE SAFETY CAR HEATING
 AND LIGHTING CO.**
 2 RECTOR ST., NEW YORK

The Bailey-Lebby Co.

MACHINERY and SUPPLIES



AGENTS FOR

REVERE RUBBER CO.

"GIANT" Seamless and Stitched
RUBBER BELT
 "RED GIANT" Sheet
PACKING
 "REVERE" Spiral and Ring
PACKING
 "SAMSON" Piston Rod **PACKING**
 "REVERE" Hydraulic **PACKING**
 "REVERE" SUCTION
 and **STEAM HOSE**
 We Carry a Complete Line of
REVERE Goods.

JEFFREY Elevating and Conveying **MACHINERY**
DODGE Transmission **MACHINERY**
LESCHEN'S Wire Rope
DETROIT Leather Belt

BOILERS ENGINES SAW MILLS

WE CARRY A FULL LINE OF
MILL, MINING AND RAILROAD SUPPLIES
CHARLESTON, S. C.

Valk & Murdock Iron Works
 Marine and Stationary Boilers, Phosphate and Fertilizer Machinery
SHEET IRON WORK IRON AND BRASS CASTING
 East End of Hazel Street CHARLESTON, SOUTH CAROLINA

Richmond Engineering & Mfg. Corporation
 PLATE, BAR and SHEET METAL WORKERS STACKS, BREECHINGS AND TANKS
Sturlevant FANS, BLOWERS, HEATING AND VEN-
 TILATING APPARATUS, ECONOMIZERS
 AND MECHANICAL DRAFT
 15th and Brown Streets, RICHMOND, VA.

J. L. LINDSAY, Inc., Richmond, Va.
Power Plant Equipment
 Pipe Valves, Fittings and Steam Specialties
ROOFING MATERIALS ESTABLISHED 1871

REPAIR PARTS FOR **TALBOTT & SONS'**
 Engines, Turbines, Saw Mills, etc.
 FURNISHED BY
RICHMOND MACHINE WORKS, Inc. RICHMOND, VA.

**Machinery Phosphate Plumbing
 and Mill Supplies**
THE CAMERON & BARKLEY CO.
 Charleston, S. C.
 Branch
 Tampa, Fla.

S. M. PRICE MACHINERY CO., Norfolk, Va.
 are prepared to furnish estimates on
 Complete Steam Power Plants, Power Transmission, Wood-Working and
 Iron-Working Machinery of all Descriptions
 Agents Virginia, North Carolina and South Carolina
ERIE CITY IRON WORKS' ENGINES AND BOILERS

GEO. W. ROPER, Pres. W. B. ROPER, Vice-Pres. & Treas. HARRY BUTT, Sec. & Mgr.
SOUTHERN SUPPLY COMPANY
 NORFOLK, VA.
 Engines, Boilers and Machinery, Locomotives
 Supplies of all kinds for Mills, Railroads and Contractors

Baltimore Machine Works
 ENGINEERS AND MACHINISTS
 Contractors Complete Power Plants Steam Heating
 Dealers Boilers, Engines, Pumps and Supplies
 ICE AND REFRIGERATING MACHINERY Special Machinery Designed and Built
 Prompt Attention to Repair Work 507 W. Pratt St., BALTIMORE, MD.

Goldens' Foundry & Machine Co.
 COLUMBUS, GEORGIA

MANUFACTURERS OF

**MACHINE MOULDED PULLEYS
 HANGERS SHAFTING**
 Couplings, Pillow Blocks, Floor Stands, Collars, Etc.

Send for Price List and Discount Sheet.

STRATTON & BRAGG CO.
 PETERSBURG, VA.

MACHINISTS AND ENGINEERS

Special Machinery
 DESIGNED, BUILT TO ORDER AND INSTALLED
Brass and Iron Castings
Power Plant and Mill Equipment a Specialty
 ESTIMATES SUBMITTED ON APPLICATION



COLUMBIAN Manila Transmission Rope

The right kind of tough resilient fibre laid with the proper kind of lubricant are two points that make "COLUMBIAN" Manila Transmission Rope the longest wearing kind.

"COLUMBIAN" Rope is made with several kinds of lubricants to fit the rope for use under different conditions.

One kind of lubricant will not prove suitable under all conditions—this is fully explained in our "COLUMBIAN" Book of Rope Transmission—sent free on request.

COLUMBIAN ROPE COMPANY

317-359 Genesee St.,
AUBURN, N. Y.

N. Y. Warehouse:
62 South St.

Chicago Warehouse:
370 River St.

Boston Warehouse:
131 Beverly St.



FROM MANILA FIBER TO PLYMOUTH ROPE—

The superior quality always found in PLYMOUTH is due, first, to the high grade Manila fiber used, and, second, to the care that goes into the making—the evenness and uniformity in spinning the yarn, forming the strands and laying the rope.

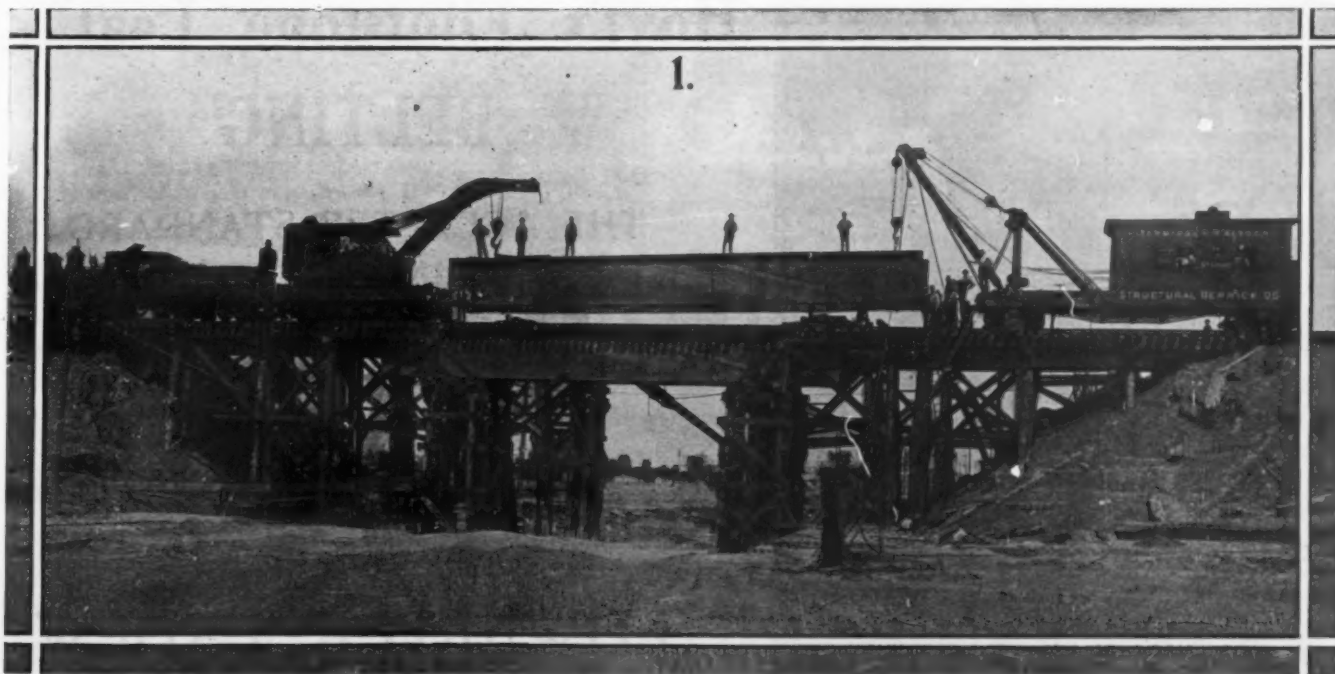
These factors naturally result in a rope that will do more work—wear longer. Users have, for eighty years, expected the greatest durability in Plymouth rope (marked with the ship), and they have never been disappointed.

Remember this when you want the most economical rope, and ask for PLYMOUTH.

PLYMOUTH CORDAGE CO.
NO. PLYMOUTH, MASS.



AGAIN STANDS THE TEST



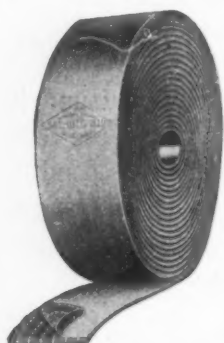
This shows two derricks of the St. Louis Terminal Railroad Asso. used in rebuilding east approach of Free Bridge, equipped with Yellow Strand and B. & B. Crucible Steel Wire Ropes. They "made good" on this job as they always have done.

WRITE FOR CATALOGUES AND PRICES No. 8.

Broderick & Bascom Rope Co. Main Office, St. Louis, Mo.
BRANCHES—NEW YORK CITY. SEATTLE, WASH.

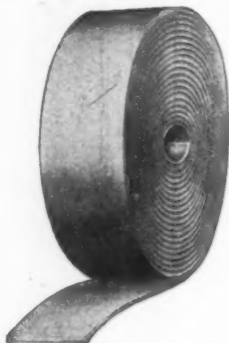
The Trio of Belts that Always Prove a Paying Investment to Any Sawmill Owner

Sawmill Special



Best for Main Drive

Lynx Special Planer



Best for Planers and Edgers

Titan



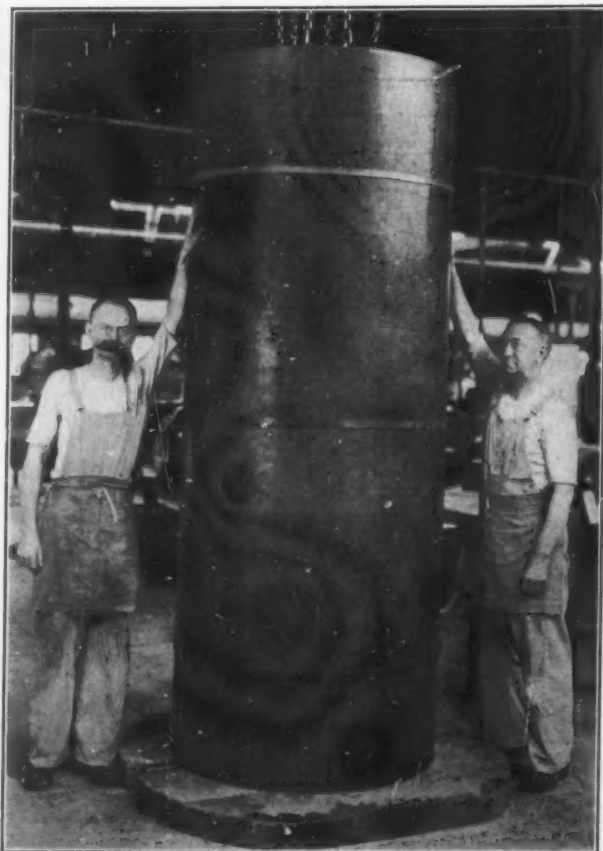
Best for Every Other Service

These three constructions will run every drive in your mill economically and efficiently. We do more than sell belt, we solve your belt problems and take care of Diamond Belt users.

Write us for facts and figures—also our booklet on Sawmill Belt

The Diamond Rubber Co., Akron, O.

Distributing Stations in All Principal Cities



One of the largest belts ever built—a Flintstone—
96" wide, 3-ply thick.

THE PERFECTION OF BELT MAKING Hoyt's Flintstone Leather BELTING

THE ACCEPTED STANDARD
SINCE 1835

IF YOU WANT QUALITY
YOU WANT

FLINTSTONE

ESTATE

EDWARD R. LADEW

MAKERS

GLEN COVE, N. Y.

CHARLOTTE, N. C.
PITTSBURGH
PHILADELPHIA

NEW YORK
NEWARK
TACOMA

BOSTON
CHICAGO
PORTLAND, ORE.

PROVIDENCE
MILWAUKEE
ATLANTA

GANDY

Stitched Cotton Duck Belting

Now has one edge of every roll

Painted Green

to help you recognize instantly "The Gandy Belt."

Inferior imitations made to look like the Gandy in appearance make us caution you to look for three identifying marks.

1st. The green edge.

2nd. The trade mark shown on this roll.

3rd. The brand—The Gandy Belt.

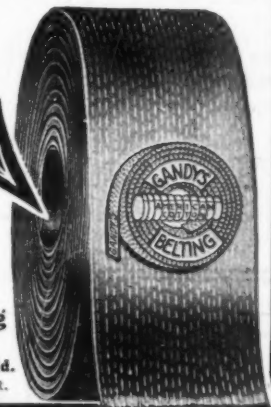
When you think of belting think of "The Gandy Belt."

It costs only $\frac{1}{3}$ that of leather and $\frac{2}{3}$ that of rubber belting, and does the work equally as well.

Write for booklet and samples today.

The Gandy Belting Company

738 W. Pratt St., Baltimore, Md.
New York Office: 88-90 Reade St.



SHEDITE WATERPROOF BELTING

This isn't cheap belting—it's economical belting. Made up from best center stock of oak tanned leather and made waterproof and steamproof to the last degree. For that difficult drive exposed to steam and moisture, we know of nothing to equal it.

I. B. WILLIAMS & SONS

DOVER, N. H.

NEW YORK

CHICAGO


BOSTON

Belt Assurance.

"BALTOBELT"

¶The Twentieth Century achievement in Leather Belt Making. ¶A product of honest, old-fashioned oak tanned Leather and skilled workmanship, perfected by many years of careful labor and study. Send for booklet and prices.

BALTIMORE BELTING COMPANY,
Leather Belt Makers, Baltimore, Md., U. S. A.



**GREATEST
POSSIBLE
STRENGTH**

**C
H
E
S
A
P
E
A
K
E
B
E
L
T**

Because of great strength and lasting ability; by being proof against water, steam, fumes, weather changes; by being satisfactory in every way for driving and conveying, the "Chesapeake" Stitch Canvas Belt is growing more and more into favor among belt users. Fully guaranteed. Let us send prices and printed matter.

Chesapeake Belting Co.
BALTIMORE, MD.

**PURE
OAK
TANNED**

FOR

Leather Belting

**ACID
WATER
STEAM
PROOF**

THE DRUID OAK BELTING COMPANY

(INC.)

BALTIMORE, MD.

FIELD INSTRUMENTS

For Engineers, Contractors and Architects



F. W. & Co. Transits and Levels are made of the best selected materials and embody all the latest improvements. They are built for service and are consequently reliable.

Tapes, Leveling Rods of the best material and workmanship. "Everything for the Drafting Room." Detail, Drawing, Tracing and Blue, Brown and Black Print Papers, Drawing Instruments, Tables, Filing Cabinets.

Second-hand Transits and Levels of good makes. In excellent working order. Good bargains.

Write for Catalogue (300) Sample Books, Lists.

F. Weber & Co., Philadelphia

Engineering Instrument Dept. Established 1854.

St. Louis, Mo.

Baltimore, Md.

Chicago, Ill.

CARY SPRING WORKS

240 and 249 West 29th St., New York, U. S. A.

Telephones, 3524-3525 Chelsea

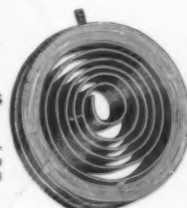


Flat Spiral and
Fine Springs
Our Specialty

Manufacturers of
All kinds of
Round and
Flat Wire
Tempered and
Untempered



SPRINGS
for
MACHINERY
ROLLING
SHUTTERS
MOTORS, Etc.
Write for Book-
let and please
mention this
paper.



Wire Springs of
Every
Description

CRESCENT BELT FASTENERS

The Strongest, Safest, most Durable, and most Economical for joining Leather, Balata, Canvas, Rubber, Hair and all Fabric Belting of every length, width and thickness.
CRESCENT BELT FASTENER COMPANY, 381-5 4th Ave., New York, U. S. A.

EVERY COTTON MANUFACTURER

SHOULD USE OUR

Combination Tanned Belting

FOR

MULES CONES MOTORS and ALL HARD DRIVES

MANY KNOW THIS FROM EXPERIENCE

ALL SHOULD KNOW BY ACTUAL TEST

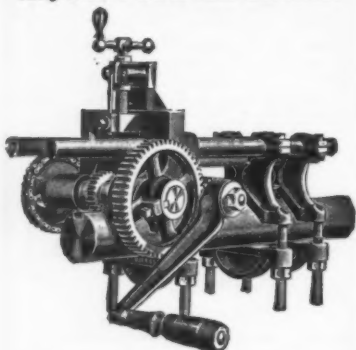
WRITE

THE NORWICH BELTING CO., NORWICH, CONN.

FOR PRICES AND SAMPLES

Perfect Key Seats in Shafting

Anywhere with this machine.



The Burr Portable Key Seater

Indispensable for the repair shop, can be carried anywhere, slipped over heavy shafting or spindles, has capacity for key seats up to 5-inch diameter, and will mill a key seat 12 inches long without resetting.

This tool can be used in almost any position and in the most cramped places. It is rapid in operation, cuts without jar or chatter and produces accurate work.

Made in two sizes. No. 1, as shown, \$40.00 net, complete with cutters.

Send for Circular.

JOHN T. BURR & SON

435 Kent Avenue, BROOKLYN, N. Y.

**PACKING BELTING HOSE
GREASE AND GREASE CUPS**
Mill Supplies for Every Condition

Write us for prices.

THE WARD-BECKE COMPANY
204 Barrister Building
Phone, Main 949. WASHINGTON, D. C.



SELECTING GRINDING WHEELS

Successful manufacturing is carried on under a rigid system of cost accounting.

Every factor that enters into the cost of production must be recognized.

Good management demands that grinding wheels must be selected scientifically. We are rapidly passing that stage where a certain wheel is used because the price is low, or because it is hard and will last a long time, or because it happened to be in stock.

We can give you a "Norton" wheel (either Alundum or Crystolon) that will do your grinding most efficiently.

Certain metals under certain conditions should be ground with Alundum; others with Crystolon Grinding Wheels. We depend on our experience and our research department to assist in finding the wheel to meet the conditions.

NORTON COMPANY, - Worcester, Mass.

Alundum Plant, Niagara Falls, N. Y.
Crystolon Plant, Chippawa, Canada

218

New York Store, 151 Chambers St.
Chicago Store, 11 N. Jefferson St.

VITRIFIED

Emery and Corundum wheels are made for any special class of grinding. Tell us your requirements and we will send grades to produce results. 1911 Catalog ready.

Vitrified Wheel Co., Westfield, Mass., U. S. A.

STANDARD ENGINE LATHES



14" to 24" swing
HIGH GRADE TOOLS
With all Modern Improvements.

GREAVES, KLUSMAN & CO.
CINCINNATI, OHIO, U. S. A.



**ABRASIVE
FAST GRINDING WHEELS**

How You Can Save on Your Present Grinding Wheel Expense

Many users today still select their grinding wheels on the erroneous theory that one kind is as good as another, which in nine cases out of ten is not correct. Each grinding operation presents its own peculiar difficulties, so that a wheel which meets the requirements of one class of work perfectly, might be entirely unsuitable for any other purpose.

That's just the reason for the economy of

Abrasive Fast Grinding Wheels

There's a special abrasive wheel made for each different kind of grinding.

FOR INSTANCE: The illustration above shows an Abrasive wheel made especially for sharpening metal-cutting saws in use in the Newton Machine Tool Company's works. Besides using them in their own shops, every machine this big concern sells is equipped with different Abrasive Fast Grinding Wheels.

Now, if you want to find out the great economy of using just the proper wheel best suited for each kind of service, why don't you write us today the special grinding conditions you are up against, and **test such an Abrasive Wheel right now.**

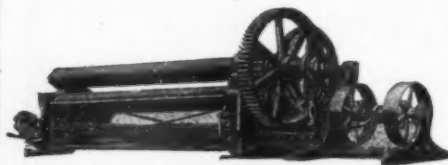
Do this now.

ABRASIVE MATERIAL COMPANY

PHILADELPHIA, PA., U. S. A.

Manufacturers Record, the Medium for Machinery Advertisements.

BENDING ROLL



We build a complete line of Punches, Shears and Bending Rolls.

BERTSCH & CO., Cambridge City, Ind.

Write for Catalogue "E."

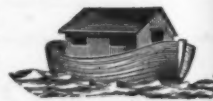
JESSOP'S STEEL

The success of "Ark" Brand High-Speed Steel is due to its endurance. That means that the tool steel gives long cutting service per grind. It stands without a superior at any price.

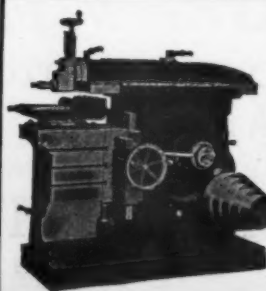
WRITE FOR CIRCULAR.

WM. JESSOP & SONS, INC.

714 No. 2d Street, Robert C. Bremer, Agent, ST. LOUIS, MO



ARK BRAND



"YOU probably do not realize the amount of money you can save in repair bills by the use of a small shaper, lathe and drill press. Instead of sending out for repairs and having your machine idle until you receive such repairs, they could be made immediately by a small shaper by yourself. You may be able to save the price of the machine in repair bills many times over the first year."

THE STEPTOE SHAPER CO.

CAMP WASHINGTON

CINCINNATI, OHIO



Equip Your Shop with "MORSE" TAPER PINS

It is very necessary that the TAPER PINS used in building Automobiles should be absolutely correct as to taper and size.

"MORSE" TAPER PINS have such a reputation for accuracy that we have to hustle to keep up with the demand.

Twist Drills, Reamers, Cutters, Mandrels, Gauges, Taps, Dies, Etc.

Send for a Catalog.

**Morse Twist Drill & Machine
Company**

New Bedford, Mass., U. S. A.



DANNEMORA TOOL STEEL

Best obtainable for

Turning, Planing, Fine Forming and Finishing



TOOLS



Carries fine cutting edge and is very durable.

Every machinist should get acquainted with it.

We'll gladly answer questions.

We carry full line of High Grade Steels, Bars, Strips, Sheets, Tubing, etc.
Let us send catalogue "D"—April, 1911—128 pages.

FIELD & COMPANY, Inc.

116 N. Seventh Street

PHILADELPHIA, PA.

STOLL PRESSES, SHEARS and DIES



Constructed with the best of workmanship and materials. They are built to do

**GOOD WORK
HARD WORK and
LOTS OF WORK**

and will do it where others have failed. Complete equipments embodying the latest improvements and labor-saving devices for making cans and forming sheet metal of every description, including culvert machinery.

Send specifications stating requirements.

CATALOGUES SENT ON REQUEST.

THE D. H. STOLL CO.

33 Lansing Street,

BUFFALO, N. Y.

Mr. Manufacturer of Small Machines—

Here is an advertisement for you to read, think about, and act upon. It means dollars to you and your customers.



This Floor Surfacers is driven by a 3 H. P. Morse Silent Chain.

Sprockets—17 and 23 teeth.

Chain— $\frac{1}{2}$ inch Pitch X 1 inch wide.

NO, the Morse Silent Chain is *not* too costly to use on all the machines you manufacture. Your reputation goes into every machine that your factory turns out. Make it safe. Put on

Morse Silent Chains

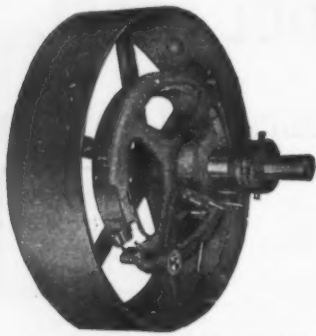
Morse Silent Chains furnish not only a better means of power transmission, but the best possible means. When new, or at any time during the life of the chain, their power loss does not exceed one per cent.

A Morse Chain-Drive on each of your machines will put its value away above that of similar machines of your competitors, yet not add much, if any, to your manufacturing costs.

The Morse Silent Chain is worth all, and more, than it costs over other transmission. Engineers everywhere appreciate that fact. When ordered in lots of say 25, 50 or 100, we can make them at less cost per chain, and *give you the benefit of this saving*. That would bring the cost to you of Morse Chains almost as low as for other transmission, and still give you a drive which would enhance the value of your machines and add to their life and efficiency.

Morse Silent Chains are made for high or low speeds, in all sizes from $\frac{1}{4}$ horse-power upwards. Write for full particulars and Bulletin No. 115.

Morse Chain Company, Ithaca, N. Y.



THE CALDWELL (OESTERLEIN PATENT)

Friction Clutch Pulley and Cut-Off Coupling

demonstrates its superiority of service
under the most exacting conditions.

Its principle of construction is that of the old-fashioned brake band, which has fewer parts, greater friction surface and greater wearing qualities than those with complicated mechanism. Write for illustrated catalogue and prices.

Also Manufacturers of Power Transmission Machinery.

W. E. CALDWELL CO., Louisville, Ky.
"INCORPORATED"

GEARS

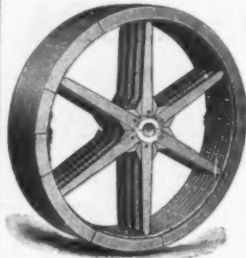


Machine Molded
Gears

heavy or light as wanted. Special grade of iron used in all our molded gears. We can make cut gears in all sizes too. Correspondence invited.

POOLE ENGINEERING & MACHINE CO.
BALTIMORE, MD.

ENGINEERS FOUNDERS MACHINISTS
Waterwheels, Castings, Pulleys, etc.



Gilbert Wood Split Pulleys

SAGINAW MANUFACTURING CO.

Saginaw, Michigan, U. S. A.

New York Branch, 88 Warren Street
Chicago Branch, 105-109 N. Canal St.
Sales Agencies in all the Principal Cities.
New illustrated Catalogue on request.



METALINE (Trade Mark Reg.)

For Heavy Loads
For Hard Service
For Durability

BUSHINGS for HOISTING SHEAVES

NORTH AMERICAN METALINE CO.
West Ave., Cor. 3rd St., Long Island City, N. Y.

TIN CANS PLAIN and LITHOGRAPHED

SOUTHERN CAN COMPANY
BALTIMORE, MARYLAND

One of the Largest Independent Plants

ALL STANDARD BEARINGS

are fully described in our
New Catalog 24A

Send for It

STANDARD ROLLER BEARING CO.
PHILADELPHIA

WHY NOT SAVE POWER?

You Can Do It by Using

The "AMERICAN" Wrought Steel Pulley



Patented

It is 45% lighter than a cast iron pulley of corresponding size and saves a proportionate amount of Power.

Every ounce of weight on a shaft that doesn't have to be there, is losing money for the owner.

Other items of economy explained in our catalogue, send for a copy.

THE AMERICAN PULLEY COMPANY

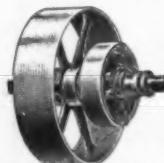
OFFICE AND WORKS: PHILADELPHIA, PA.

Warehouses: New York, 203 Lafayette St. Boston, 105 Pearl St. Chicago, 124 S. Clinton St.

THE A. & F. BROWN CO.

ENGINEERS, FOUNDERS, MACHINISTS AND MILLWRIGHTS

172 FULTON ST., NEW YORK

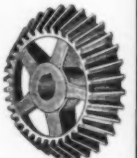


Friction Clutch Pulleys
and Couplings.

POWER TRANSMISSION MACHINERY

FRICITION CLUTCH COUPLINGS
FOR HEAVY WORK

GEARS



Gears of all kinds
and sizes.

MACHINE MOULDED, CUT SPUR AND PLANED BEVEL GEARS
OF EVERY DESCRIPTION

ROPE DRIVES A SPECIALTY

WE LAY OUT, MAKE THE DRAWINGS, FURNISH THE MATERIAL
AND ERECT IT

SEND FOR CATALOGUE

WORKS—ELIZABETHPORT, N. J.

The Universal Telegraphic Company, Baltimore, Md.

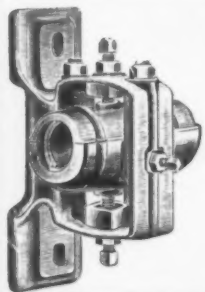
Manufacturers of Standard Telegraphic Typewriters.

General Machinists, Electrical Engineers

Inventions "tooled up" for standard manufacture.

Bids for accurate contract work.

Screw machine work.



Drop Hangers, Wall Brackets, Floor Stands,

With Universal Adjustment. Convenient and Efficient.

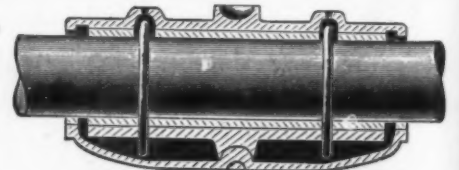
WE BUILD A COMPLETE LINE OF

Power Transmission Machinery

The popularity of our transmission machinery is due to the
economic and satisfactory service it always gives the user.

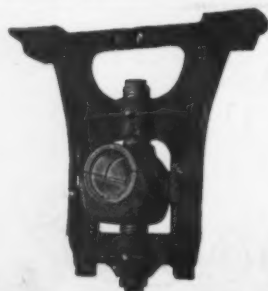
LET US QUOTE YOU PRICES

ROYERSFORD FOUNDRY & MACHINE CO.



B. & S.

PHILADELPHIA, PA.



T. B. WOOD'S SONS CO., CHAMBERSBURG, PA.

Manufacturing Engineers

Modern and Approved Appliances for the Transmission of Power

Upon request, our new and complete Catalog No. 55 will be mailed promptly to any
user of power



The POSITIVE Combination Split Wood Rim Steel Arm Malleable Hub Pulley is the Pulley for Cotton and Textile Mills

One of the largest manufacturers of cotton products in the world is installing POSITIVE Combination Split Pulleys in his mill, arranging his machines in a series of motor-driven groups and belting from motors on the floor to POSITIVE Pulleys on overhead main spinning shafts.

It did not take this progressive manufacturer long to decide on POSITIVE Pulleys and specify them in his mills. We expressed a sample pulley for him to try out, and in a short time the order was forthcoming. He has been in business a great many years, has tried all kinds of pulleys and would be called conservative and skeptical by some people, in that he has to be shown before conviction; but he knows a good thing when he sees it, he knows what's what in pulleys, he knows when he sees the greatest pulley ever produced, and



You Can Get the POSITIVE Pulley in Diameters 12 to 120-in. and Faces 3 to 48-in.

that is his judgment of the POSITIVE Pulley. That's why he bought a bunch of them.

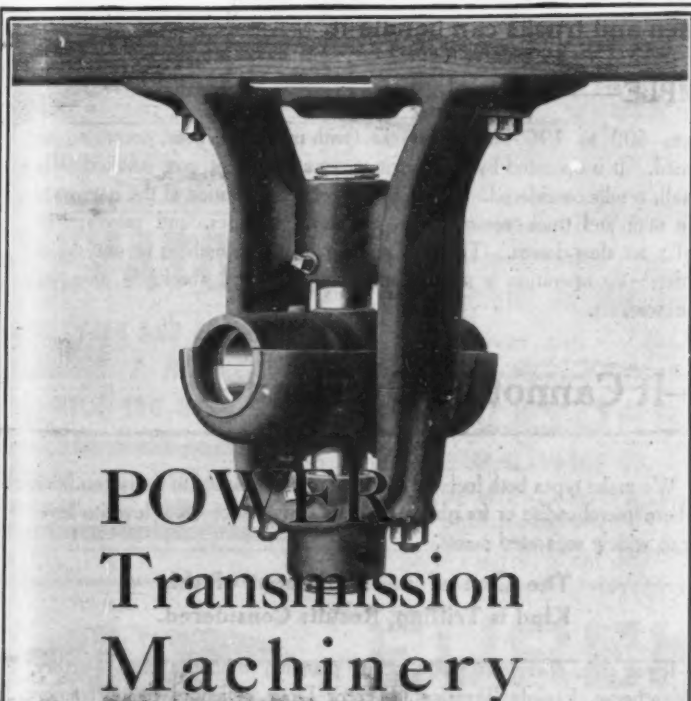
There are some good sound reasons why the POSITIVE Pulley is the pulley for cotton and textile mills. Aside from the fact that it is the best pulley in any factory because of its higher efficiency, due to lightness, strong clinging traction on the wood rim, which is glued and nailed with barbed nails, segment to segment; and low wind resistance to the small steel arms, it is peculiarly desirable in mills because it is smooth all over and the interior is free and open, so that cotton fluff or fuzz cannot collect in it and pile up like a snow bank.

If you will just try one POSITIVE Pulley in your mill, you too will then be satisfied with nothing but better pulleys than you have ever had—POSITIVE Pulleys.

Positive Clutch and Pulley Works, Buffalo, N. Y.

Canadian Works: Toronto, Ont.

New York Office: 95-97 Liberty St.



POWER Transmission Machinery

Made of our own steel
in our own foundries
and shops

Send for new illustrated book "M"

**Jones & Laughlin
Steel Company**

AMERICAN IRON & STEEL WORKS
Pittsburgh



POWER TRANSMISSION

Pulleys, Gearing, Friction Clutches, Rope
Sheaves, Hangers, Couplings, Shafting.

HIGH QUALITY

THE WOLF CO., Chambersburg, Pa.

CUT GEARS

TO 96" DIAMETER

HERRINGBONE, SPUR, BEVEL, MITER, METAL, RAWHIDE

THE EARLE GEAR & MACHINE CO.

Stenton and Wyoming Avenues

PHILADELPHIA, PA.

To keep in touch with Southern Development, read the Manufacturers Record.

M O R A N

MORAN AUTOMATIC FILLER

For Half Barrels, Barrels, Casks or Drums
For Alcohol, Whiskey, Coal Oil, Gasoline, Molasses, Residuum, Machinery,
Cylinder and Lubricating Oils, Tanning Extracts, etc.

AUTOMATICALLY STOPS WHEN FULL

Write for New Catalogue.

Moran Filler with Flexible Ball Joint Connection.
Moran Flexible Steam Joint Co., Inc., Louisville, Ky.

M O R A N

Prompt vs. Dilatory

Slow handling of merchandise, freight, or other material in Factories, Stores, Warehouses, Shipping Platforms, Freight Stations, Steamboat Docks and elsewhere eats into dividends faster than any other manufacturing or merchandising operation. Today successful business demands quick service. Everything must be kept moving. No one will tolerate dilatory handling of goods of any kind. The faster things are moved, the better—and the merchant, or manufacturer, or transportation company who provides this quicker and more economical service gets the business and the largely increased profit that accompanies it.



OTIS INCLINED DOCK ELEVATOR.

60% to 80% of the Time and Cost of Freight Handling Can be Saved by the Use of the Otis Inclined Elevator

Capacity enormously increased and freight handled far quicker, and at a far less cost than it can be moved by any other method,—because ONE Otis Inclined Elevator will move MORE freight in a given time than six or eight vertical elevators of the usual type,—or move MORE freight in the same time, and at less cost than fifty to one-hundred men and trucks can handle it.

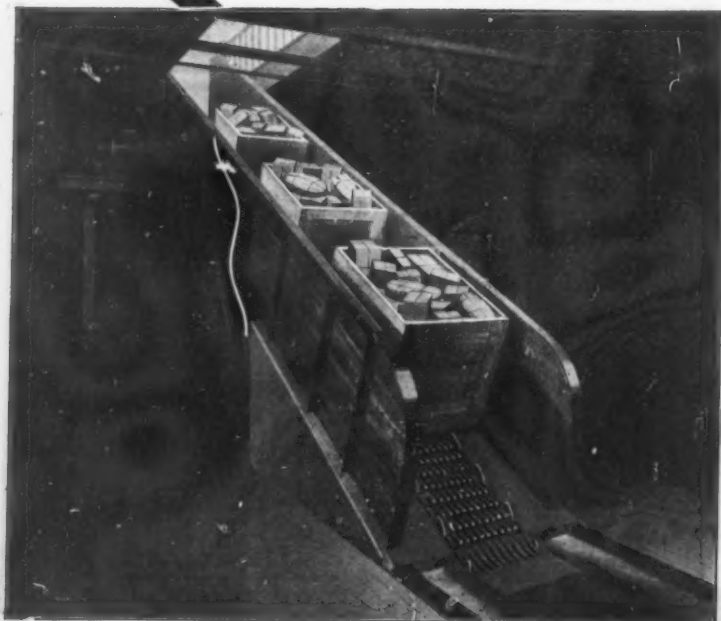
—FOR EXAMPLE—

The above illustration is a typical view of one of the gangways at the Metropolitan Steamship Co.'s Dock, Boston, Mass., using the Otis Inclined Dock Elevator. Three have been installed on this Dock, and two on the Merchants and Miners' Transportation Co.'s Dock at Savannah Ga.—and many others elsewhere.

No matter what the load on the truck, or the weight of same, or the grade of the gangway, ONE man handles it. This elevator will deliver

from 600 to 1960 loaded trucks (with men) per hour, according to speed. It is operated by an electric motor at a current cost infinitesimally small, results considered. There can never be congestion at the gangway, the man and truck come to the elevator,—engages, and moves;—no balks, no slow-downs. There is nothing to break; nothing to get out of order;—the operation is positive and continuous and absolutely safe for the workers.

Its Capacity is Limitless—It Cannot be Overloaded



OTIS INCLINED ELEVATOR IN FACTORY SERVICE.

We make types both Inclined and Horizontal, adapted to every condition where merchandise or freight is to have conveyance from level to level or to widely separated points.

The Cost of an Equipment of this Kind is Trifling, Results Considered.

If you own, operate, manage, or are planning to build a Store, Factory, Warehouse, Freight Terminal, Pier or Dock, or any place where merchandise or freight should have constant movement, we invite you to make a thorough investigation of the Otis Inclined Elevator.

Without obligation our Engineering Department will supply full information, show the way to best meet specific requirements, and submit estimate of installation cost. Correspondence invited. Write to us.

Otis Elevator Company

17 Battery Place, New York City

Offices in all Principal Cities in the World.

IT SAVES YOUR LIFE

before you know of danger.

**THE
ROTH ELEVATOR
Safety Appliance**Automatic. Trustworthy.
Can be used on any kind
of elevator.
Our Booklet goes into
detail.**Roth Elevator Safety Co., Inc.**
General Offices, American Building
BALTIMORE, MD.**AMERICAN
ELEVATORS****FOR ANY REQUIREMENT**Operated Magnetically by Switch in Car, Automatically by Push Buttons,
Mechanically by Pilot Device or Hand Cable.
Every safety device known is attached to our equipment.**Single or Tandem Gear Drum or Traction Type**
AMERICAN MACHINE CO., LOUISVILLE, KY.

Largest Independent Elevator Plant in Entire South

REPRESENTATIVES:

Augusta, Ga., Moore-Edenfield Elec. & Mfg. Co.	Monterey, Mex., C. Holck & Co.
Clarksville, Tenn., W. M. Case.	Nashville, Tenn., John Bouchard & Sons Co.
Dallas, Texas, J. Peyton Hunter.	New Orleans, La., American Elevator & Electric Co.
Memphis, Tenn., Memphis Electric Co.	Oklahoma City, Okla., Frank Long.
Macon, Ga., Singleton-Smith Co.	St. Louis, Mo., American Electric Machine & Elevator Co.

Full and Semi-Automatic Elevator Gates, Standard
Tin Clad Fire Doors, Shutters and Hardware

MANUFACTURED BY

RICHMOND SAFETY GATE CO.ATLANTA OFFICE
402 Rhodes Bldg.

RICHMOND, IND.

BALTIMORE OFFICE
608 East Fayette St.

NEW Catalogue Mailed on Request

ELEVATORS **PASSENGER & FREIGHT**
ELECTRIC, HAND POWER,
and BELT POWER**Westbrook Elevator Co.**

Correspondence Solicited

ATLANTA, OFFICE, 216 Rhodes Building

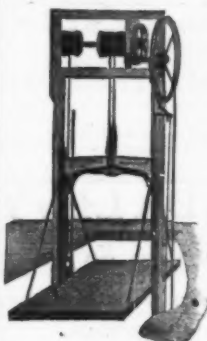
DANVILLE, VIRGINIA

**"SIMPLEX"
CHAIN
HOISTS**

HAVE

Two-SpeedsMaking them a
great labor and
time saver.**CRANES
TRAMWAYS
ELEVATORS**

Catalog Free.

J. G. SPEIDEL
READING, PA.**ELEVATORS****FOR
HAND,
BELT
OR
ELECTRIC
POWER**Write for Prices and Descriptive
Matter

Mention this paper.

Sidney Elevator & Mfg. Co.

SIDNEY, OHIO

ELEVATORS**PASSENGER AND FREIGHT
ELECTRIC - HYDRAULIC
BELT AND HAND****JAMES H. CURRAN ELEVATOR CO.**
114 W. 2d St. CINCINNATI, OHIO**ELEVATORS****WARSAW ELEVATOR CO.****T. FRANK WILHELM, Manager**
BALTIMORE, MD.Standard for a quarter century.
Passenger and Freight.
All Powers.**TURNER ELEVATORS****K. C. ELEVATOR MFG. CO.**

(Established 1881)

107-113 W. 19th St., Kansas City, Mo.

ELEVATORS**ELECTRIC
BELT AND HAND
POWER****SAFE - DURABLE - RELIABLE****Hollister-Whitney Co. - Quincy, Ills.****We are SPRING SPECIALISTS. You should know us.**SPRINGS OF
Flat,
Round
and
Square
Wire**All Shapes and Styles
High Grade Machinery Springs**SPRINGS OF
Steel
Brass
Music Wire
Phosphor Bronze
Etc.**Raymond Mfg. Co., Ltd., Corry, Pa.****EUREKA FIRE HOSE**Original and largest manufacturers of RUBBER LINED COTTON HOSE. Fire Hose for all
purposes and in all sizes. Our special brands are:**EUREKA-4-Ply PARAGON-3-Ply RED CROSS-2-Ply**The only circular and seamless woven brands of Fire Hose made that possesses four, three and
two entirely distinct and independent plies, and can be entirely separated, and possesses four, three
and two warp and filling threads.**EUREKA FIRE HOSE MFG. CO., NEW YORK**BOSTON, MASS.
SYRACUSE, N. Y.
PHILADELPHIA, PA.COLUMBUS, O.
ATLANTA, GA.
CHICAGO, ILL.
SAN FRANCISCO, CAL.MINNEAPOLIS, MINN.
OMAHA, NEB.
KANSAS CITY, MO.
DALLAS, TEX.TORONTO, ONTARIO.
DENVER, COLO.
SPOKANE, WASH.

Architects, Contractors, Engineers, Chemists.

MILBURN, HEISTER & CO.

ARCHITECTS

WASHINGTON, D. C.

McLAUGHLIN & JOHNSON

ARCHITECTS

Rooms 313-314 Lynch Building

LYNCHBURG, VA.

CHAS. GODFREY PETTIT, Jr.

ARCHITECT

DANVILLE, VA.

CAIN, SHEPHERD & PEALE

ARCHITECTS

RICHMOND, VA.

CHARLES H. NICHOLS

Engineer and Architect

1133 Broadway, New York

Mem. Am. Soc. M. E., Assoc. A. I. E. E.,

M. Am. Soc. C. E.

Factories and Mills designed, including Construction, Ventilation, Lighting, Sanitation, Fire Protection and Power Plant

WATER COLOR PERSPECTIVES

Assistance in preliminary work.

ALGER AND SMITH

403 Candler Bldg. Atlanta, Ga.

Day & Zimmermann

Successors to

DODGE, DAY & ZIMMERMANN

ENGINEERS

808 Chestnut St., Philadelphia

Layout, Design, Construction,

Industrial Plants,

Examination, Reports and Operation.

Public Service Properties.

L. L. SUMMERS

J. M. S. WARING

L. L. SUMMERS & CO.

ENGINEERS

REPORTS AND CONSTRUCTION

First National Bank Bldg. CHICAGO

THE JAMES H. HARLOW COMPANY

ENGINEERS - CONTRACTORS

Hydro-Electric Powers, Electric Railways,

Water Supply, Sewerage, Irrigation.

Design—Finance—Construct.

BALTIMORE, MD.

B. G. KLODT

Designing and Constructing Engineers

Specialist on Sewer, Water, Power, and

Irrigating Systems.

Gunter Bldg., Rooms 526-28-30, San Antonio, Tex.

C. S. YOUNG COMPANY

Civil, Mechanical and Structural Engineers.

Examination and Reports for Development

on Mexican Properties.

501 Frost Building San Antonio, Texas.

ALEXANDER POTTER, C. E.

Hydraulics.

Sanitation.

Concrete Structures.

Designed—Financed—Executed.

114 Liberty St., NEW YORK.

Tel. Rector 568.

H. E. MOLE

ENGINEER

Examinations, Estimates and Reports

Plans and Specifications.

Lighting and Power Properties.

55 Liberty St. NEW YORK

THE ARNOLD COMPANY

ENGINEERS - CONTRACTORS

ELECTRICAL - CIVIL - MECHANICAL

108 SOUTH LA SALLE STREET

CHICAGO

T. CHALKLEY HATTON

M. Am. Soc. C. E., Consulting Engineer.

Examinations, Surveys and Reports made. Plans and Specifications prepared and Construction superintended for Proposed Systems of Water Supply, Drainage, Sewerage and Sewage Disposal and Improved Street Pavements.

WILMINGTON, DEL.

L. T. Emory, C. E., R. H. Eisenbrey, R. S. in Ch. E.

EMORY & EISENBREY

Philadelphia, Pa.

CIVIL, CHEMICAL AND

INDUSTRIAL ENGINEERS

Designs of Industrial Plants. Modernising. Investigations and Reports on Manufacturing and Mining Propositions.

HILDRETH & CO., Inspecting Engineers

Structural and Reinforcing Steel.

Cement and Materials of Construction.

ERNEST L. MYERS & CO., - Representatives

509 Juanita Bldg., DALLAS, TEX.

Mem. Am. Soc. of Engineering Contractors.

GEO. W. ANGLE

Consulting Engineer

Chief Engineer

60 New Street

Central Construction Co.

American Cen. Rwy. Co.

NEW YORK

E. W. MYERS

Consulting Engineer

Water Power, Water Supply,

Sewerage

GREENSBORO, N. C.

MARTIN J. LIDE

BIRMINGHAM, ALA.

Consulting and Constructing Electrical and Mechanical Engineer.

Frederick H. Lewis

Civil and Mechanical Engineer

Consulting Engineer

Brown-Marx Bldg. Birmingham, Ala.

HENRY I. LEA

CONSULTING GAS ENGINEER

Gas Building, Chicago

Design—Construction

Management—Appraisal

Complete Examinations Made

S. D. BROWN

CONSULTING ENGINEER

Water, Light and Sewerage Systems

ELECTRICAL WORK A SPECIALTY

Road and Street Work Land Developments

806 JAMES BLDG., CHATTANOOGA, TENN.

H. S. Jaudon Engineering Co.

DESIGNING, SUPERVISING AND

CONSULTING ENGINEERS

Specialty—Water Works, Sewers and

Street Paving

MAIN OFFICE, Box 582, SAVANNAH, GA.

Box 576, ATLANTA, GA.

W.S. BARSTOW & CO.
INCORPORATED
CONSULTING and
CONSTRUCTION ENGINEERS
PUBLIC SERVICE PROPERTIES
FINANCED and MANAGED
50 Pine Street New York

The Manning-Hughes Co.

ENGINEERS—CONSTRUCTORS

ELECTRICAL—CIVIL—MECHANICAL

CAMDEN, S. C.

CHARLESTON, S. C.

ARTHUR PEW

M. AM. SOC. C. E.

M. INST. C. E.

Consulting Engineer

Municipal Work ATLANTA, GA.

EDGAR M. GRAHAM

ASSOC. M. AM. SOC. C. E.

CONSULTING ENGINEER

MUSKOGEE, OKLAHOMA

William C. Spiker, C.E.

CONSULTING ENGINEER

Forsyth Bldg.

ATLANTA, GA.

Buildings, Bridges, Dams,

Hydro-Electric Powers.

GEO. H. WHITFIELD

Consulting Electrical and Mechanical Engineer

REPORTS PLANS SPECIFICATIONS

Address care Virginia Railway & Power Co.

RICHMOND, VA.

B. PARKS RUCKER

CHARLOTTE, N. C.

Consulting and Constructing

ELECTRICAL ENGINEER

Estimates, Plans, Specifications and Supervision of Construction of Lighting, Industrial and Power Installations. Hydro-Electric Plants. Power Transmission. Municipal Lighting, etc.

DERONDA LEVY

Electrical Contractor

Complete Isolated Plants, Electric Light and Power Wiring, Interior Telephone Systems.

Equipped to do work in any of Southern States.

COLUMBUS, GEORGIA.

HUNTINGTON, W. VA.

The Leete-Maupin Engineering Co.

ENGINEERS

Civil Mining Municipal

Branch Offices

JACKSON, KY. WILLIAMSON, W. VA.

TOWN PLANNING

Real Estate Development along Sound

Economic and Artistic Lines a Specialty.

May We Serve You?

HOLMES BLAIR and BRENT S. DRANE

Late Div. Eng. Assoc. Mem. Am. Soc. C. E.

C. B. & Q. Rwy. Mem. Nat. Con. City Planning

1118 Realty Bldg., CHARLOTTE, N. C.

S. J. MACFARREN

EFFICIENCY ENGINEERING

Motor Traction, Factory

Production, etc.

Fleming Building, 1419 G Street N. W.

WASHINGTON, D. C.

HARRY BURN

Analytical Chemist

Analysis of Ores, Fuels, Fluxes, Gases, etc.

1319 Third Avenue, BIRMINGHAM, ALA.

W. WALDO

ENGINEER

HOUSTON, TEXAS

EXAMINATION

AND

DEVELOPMENT

OF

TEXAS PROPERTIES

202-204 COML. BANK BLDG.

P. O. KEILHOLTZ

Consulting Engineer

Continental Building BALTIMORE, MD.

Formerly Chief Engineer United Railway & Electric Co. and Consolidated Gas, Electric Light & Power Co. of Baltimore.

FROENLING & ROBERTSON

RICHMOND TESTING LABORATORY

Chemists and Economic Geologists

Analysis of all kinds. Waters and fertilizers specialties. Standard Cement Testing. Examinations and reports on mineral properties.

2 N. 9th Street, RICHMOND, VA.

GEORGE C. DAVIS

Established 1909

Analyses of Iron, Steel, Ores, Alloys,

Coal, Sand, Clay and Cement

9 South Tenth Street, PHILADELPHIA, PA.

DR. CHAS. F. McKENNA

Fulton Bldg., Hudson Terminal, 50 Church St.

NEW YORK CITY

CHEMIST AND CHEMICAL ENGINEERS

MATERIALS A SPECIALTY

PROCESSES, INSPECTION, REPORTS ON PROPERTIES

BUREAU OF Associated Geological Engineers

Frederick G. Clapp, Myron L. Fuller, etc.

PITTSBURGH OFFICE, 331 FOURTH AVE.

Examinations and reports on oil and gas properties

Boston Office, 131 STATE ST.

Reports on water supplies, bridge and dam foundations, ore deposits, cement and structural materials, coal, mineral fertilizers, etc. Analyses and Assays.

JAMES H. PAYNE

CHEMICAL ENGINEER AND SPECIALIST IN

ROTARY FURNACE PRACTICE

Practical furnacing tests, analyses, etc., of materials. Wastes utilized. Processes improved.

Problems in nodulizing, roasting, or calcining chemical and metallurgical products dealt with

YORKTOWN, VIRGINIA

F. JULIUS FOHS

Mining Geologist and Engineer

Reports on Developed and Undeveloped Mineral Lands. Surveys made, Mines located.

Plants Designed and Production Costs Reduced.

LEXINGTON, KY.

ALFRED M. QUICK

Mem. Am. Soc. C. E. Consulting Engineer

Reports on Engineering Propositions

Plans and Supervision of Construction of

WATER SUPPLY AND SEWERAGE SYSTEMS

PURIFICATION AND DISPOSAL WORKS

DAMS AND POWER PLANTS

Valuation and Advice as to Operation and

Management of Existing Water Works

725-726 Munsey Bldg., BALTIMORE, MD.

Landscape Mapping for Suburban Development a Specialty

REDING & HOWARD

Civil and Landscape Engineers

BALTIMORE, MD.

JOHN HAGUE

Refrigerating Engineer and Contractor

Designing, Supervising, Contracting

Ice and Cold Storage Plants, Breweries, Ice Storage Houses, Abattoirs, etc.

Write me about ICE STORAGE for either new or old plant. My new ideas will interest you. Address

1228 Pine St. St. Louis, Mo.

Mill Architect and Engineer**SPECIALTY:**

Textile Mills and Water Power Developments

J. E. SIRRINE

GREENVILLE, S. C.

LOCKWOOD, GREENE & CO.

Architects and Engineers for Industrial Plants

First National Bank Bldg.,
CHICAGO, ILL.93 Federal Street,
BOSTON, MASS.Southern Office,
GREENVILLE, S. C.

29-2

**STONE & WEBSTER ENGINEERING CORPORATION**

CONSTRUCTING ENGINEERS

BOSTON, MASS.

J. G. WHITE & COMPANY

(Incorporated)

ENGINEERS—CONTRACTORS

43-49 Exchange Place, } NEW YORK First National Bank Bldg., Chicago, Ill.
43-49 Wall Street, } Alaska Commercial Bldg., San Francisco, Cal.
London Correspondents, J. G. White & Co., Ltd., 9 Cloak Lane, Cannon Street, London, E. C.
Principal Philippine Office, Manila, P. I.**SELDEN-BRECK CONSTRUCTION CO.
BUILDERS**Some of the work recently awarded us:
W. O. W. Building, Omaha, Neb., eighteen-story
fireproof; Inter-Southern Life Insurance Build-
ing, Louisville, Ky., eighteen-story fireproof.

ST. LOUIS

LOUISVILLE

OMAHA

JAMES C. LAWRENCE, Chemical Engineer

Designs, Estimates, Inspections, Tests, Investigations

EXPERT IN FOREST PRODUCTS—Wood distillation plants: wood turpentine plants: steam and
destructive distillation projects; utilization of waste, ashes, sawdust, etc.: wood preservation
plants, specifications and advice; wood pulp and paper mills; alcohol and other refining projects.
General chemical engineering work on plants and processes. Efficiency Engineering Problems.

Mail and Telegrams—Business Men's Club Bldg., - MEMPHIS, TENN.

**THE UNDERGROUND
CONSTRUCTION COMPANY**

BANK OF COMMERCE BLDG., ST. LOUIS, MO.

WATERPROOF
FOUNDATIONSCORRUGATED
CONCRETE PILES**THE HYDRAULIC PROPERTIES COMPANY.**

DAMS AND HYDRO-ELECTRIC POWER PLANTS

60 Broadway, New York.

EFFICIENCY ENGINEERS

Norman A. Hill & Co.

BALTIMORE

TORONTO

WINNIPEG

DIXIE BLUE PRINT CO.317 Austell Bldg.
Atlanta, Ga.Blue Prints, Blue Line, Brown or Black Line, Negatives, Etc., of any
size on either paper or cloth.

Quality, Prompt Service and Prices Unsurpassed. Correspondence Invited.

WE FINANCE AND ERECT

All Kinds of Commercial Buildings

We are in position to aid in financing any sound business enterprise
and to erect the building. Correspondence solicited.FALLS CITY CONSTRUCTION COMPANY, Incorporated
GENERAL CONTRACTORS

LOUISVILLE, KY.

FT. WORTH, TEX.

WE FINANCE AND CONSTRUCT

We make loans, leases and construct all classes of

COMMERCIAL BUILDINGSWe also promote and finance all kinds of
legitimate enterprises.**GULF COAST CONSTRUCTION COMPANY**

DESIGNERS AND ENGINEERS

906 Scanlon Building

HOUSTON, TEX.

**The J. B. McCrary Co.
ENGINEERS**

ATLANTA, GA.

MUNICIPAL IMPROVEMENTSSouthern work only. Have built over half of the Water, Light and Sewer Systems
in Georgia and Alabama.

We Design—Finance—Superintend

Bonds Purchased

WE FINANCE and ERECT BUILDINGS**LISLE-DUNNING CONST. CO.**

General Contractors

OKLAHOMA CITY,

OKLA.

We can give owner the most efficient
management possible at the least cost.Write us full particulars and we will
give you our proposition if your project
is a sound one.**Pure Water or Sterile Water**FROM ANY SOURCE, FOR MUNICIPAL
OR INDUSTRIAL SUPPLYContracts for complete pumping, filtration, sterilizing,
softening or iron removal plants. Hydraulic
concrete work.

TUCKER & LAXTON, - Charlotte, N. C.

HOWARD & COMPANY

INDUSTRIAL MINERALS

BROKERS

COTTON SEED PRODUCTS

Foreign and Domestic Fertilizer Materials. Import and Export Freight Contractors.

Custom House Brokers and Forwarding Agents.

Cables—DESPATCH

SAVANNAH, GA.

TRADE-MARKS REGISTEREDIN THE UNITED STATES AND FOREIGN COUNTRIES. BEST SERVICE.
MODERATE FEES. TRADE RELATIONS ESTABLISHED ABROAD.WRITE TODAY BENNETT S. JONES. PATENT AND
VICTOR BUILDING. TRADE-MARK ATTORNEY
WASHINGTON, D. C.**DAGOSTIN & ANGELINI BROS.****MOSAIC and TILE WORK**Decorative Roman, Venetian Terrazzo and Ceramic Mosaics and Interior
Marble Work. Cement Flooring.

Home Office—744 Hull St., Montgomery, Ala.

201 Marietta St., Atlanta, Ga.

RUSE & THOMPSON

Successor to John C. Scherer, Jr., Co.

9 and 11 N. Gay St., Baltimore, Md

Designers and Manufacturers of

Bank, Store and Office Fixtures and Furniture

Write for estimates before placing order.

York Safe & Lock Co.

BANK AND SAFE DEPOSIT

VAULTS**SAFES**

FIRE AND BURGLAR PROOF

YORK, PA.

BALTIMORE, MD.



Sand, Gravel, Lime and Cement

Daily capacity of our sand and gravel plants 4000 tons. Our 25 years' experience enables us to intelligently take care of your requirements. We can handle your orders anywhere in the South.

WE are MANUFACTURERS and PRODUCERS and not brokers. Get our prices B-4-U buy.

KIRKPATRICK SAND & CEMENT CO.
BIRMINGHAM, ALA.



Alpha Portland

The Recognized Standard American Brand

On the market for the past 20 years. One brand only manufactured, a strictly straight Portland, which in uniformity and general excellence cannot be excelled.

ALPHA PORTLAND CEMENT CO.

General Office — 9 Centre Square, EASTON, PA.

Southern Office—National Bank Bldg.—Savannah, Ga.

Write for Our Handsomely Illustrated Book. Sent Free.



UNIFORM CEMENT MEANS SATISFACTION

If you buy or handle cement, you want to be sure that it will always be the same.

LEHIGH PORTLAND CEMENT

is always uniform, because the same high standard of manufacture is observed in all our mills.

Head Office, ALLENTOWN, PA.

Western Office, CHICAGO, ILL.

Southern Office, Memphis Trust Building, Memphis, Tenn.

Southern States Portland Cement

We produce only one grade—

THE HIGHEST

ALWAYS UNIFORM

Southern States Portland Cement Co.

Office and Mills—Rockmart, Ga.



CLINCHFIELD

The Cement of Quality and Economy
contains less than 1½ per cent. Magnesia.



CAPACITY
DAILY

3000
BARRELS

Do you know of any other cement in the South that runs as low in Magnesia as this? We do not.

Clinchfield Portland Cement Corp.

Office and Mills, KINGSPORT, TENN.

Standard

PORTLAND CEMENT

BEST FOR ALL USES

STANDARD PORTLAND CEMENT CO

SALES OFFICE - BIRMINGHAM - ALA
WORKS LEEDS. ALA.



Avoid Fires and Save Insurance



The latest and most comprehensive book ever published on reinforced concrete factory and warehouse construction, showing pictures of two hundred and thirty buildings with fifty

interior views, and fac-simile letters from manufacturers occupying these buildings.

Full data on cost per square foot, cost per cubic foot, insurance, etc.

No prospective builder or manufacturer can afford to be without this book.

The book is of particular value to architects and engineers.

Mailed to anyone upon receipt of twelve cents in stamps to cover postage. The book contains two hundred and twenty-four pages, is printed on heavy coated paper, with two hundred and fifty half-tone cuts, and is the handsomest and most complete book ever published on the subject.

WM. G. HARTRANFT CEMENT CO., Inc.

SOLE SELLING AGENT

VIRGINIA PORTLAND CEMENT CO.

Broad and Chestnut Streets, Philadelphia, Pa.

Works: Fordwick, Va. Capacity: 1,000,000 barrels per annum.

Send four cents in stamps for one-hundred-and-twelve-page book, fully illustrated, showing how to mix and place concrete by hand, how to build all kinds of cement farm buildings, troughs, feeding floors, silos, dipping vats, cisterns, sidewalks, etc.

Sent free on application, illustrated book giving information on cement and views of work made of Old Dominion Portland Cement

20TH CENTURY PRODUCTS

TIDEWATER PORTLAND CEMENT

Ground to a fineness of 85 per cent., passing the 200-mesh sieve. Every barrel of Tidewater Portland Cement contains 13½ per cent. more active cement than the standard ground brands. A barrel of "Tidewater" will go as far as 1¼ barrels of other brands ground only to the standard degree of fineness.



TIDEWATER HYDRATED LIME

Has proved a boon to the farmers of Maryland, Pennsylvania, Virginia and North Carolina, who have increased the yield of their soil 25 per cent. and decreased their lime bills 33½ per cent. by using Tidewater Hydrated Lime.

TIDEWATER PORTLAND CEMENT CO.

Sales Office: 807 Keyser Building, Baltimore, Md.



ROYAL

A Standard Portland Cement
of the Highest Grade

DAILY CAPACITY 6000 BARRELS

NO ORDER too large or too small

We guarantee

Absolute uniformity of product. Prompt Shipment at Short notice.
To meet the most exacting tests. To pass all standard specifications.

Let us quote prices.

DIXIE PORTLAND CEMENT CO.

Sales Office James Building, CHATTANOOGA, TENN.

Security Portland Cement

Quality is naturally your first consideration in selecting cement, and for this reason "Security" has a valid claim to your attention.

It is of absolute uniformity of composition and pulverization. It is moderately slow-setting, thus insuring increased strength at long periods. It is guaranteed to meet standard specifications.

Prompt service is assured by our 2000-bbl. daily capacity and splendid shipping facilities on four railroads.

"ALCA" LIME

A quick-hardening, highly plastic, non-staining combination of Calcium Aluminate and Hydrated Lime, suitable for all-around use in mortars, plasters and stuccos. Economical and satisfactory. Prepared with or without hair.



BERKELEY HYDRATE

Pure High-Calcium Lime mechanically slacked at the kiln and freed from all impurities, including over- and under-burned particles. Will not air-slack or otherwise deteriorate. Mixes perfectly and easily and is always ready for use. Renders mortars and concretes waterproof, lightens and warms the color tone.

Our Information Bureau is at your service. All inquiries and problems submitted receive prompt and courteous attention. Write or ask for interesting and instructive Booklets.

SECURITY CEMENT & LIME CO.
812 Equitable Bldg., BALTIMORE, MD.
Pittsburgh, Pa. Washington, D. C.



LIMESTONE BRAND PORTLAND CEMENT

As fine as any on the market.
Guaranteed to pass all standard specifications.

Used by the U. S. Government in their Ohio River and tributaries work.

The Ironton Portland Cement Co.

IRONTON, OHIO.



KOSMOS PORTLAND CEMENT

used in the most important engineering undertakings because of its high quality. One grade only. Prompt shipments. Let us quote.

Kosmos Portland Cement Co., Inc., Louisville, Ky.

HAVEMEYER BARS WILL SAVE YOU MONEY BECAUSE "EVERY POUND PULLS"

Prompt mill shipment

Immediate stock shipments

CONCRETE STEEL COMPANY

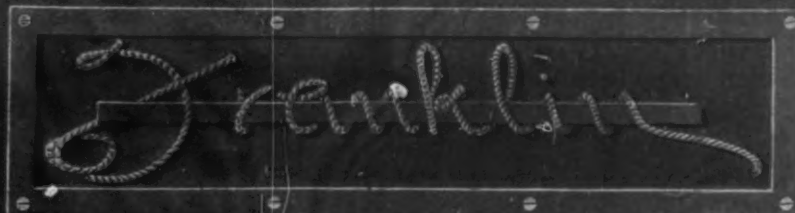
29 Broadway, New York

Monadnock Block, Chicago

70 Kilby Street, Boston

STEEL FOR CONCRETE REINFORCEMENT

FLATS
ROUNDS
SQUARES
TWISTED

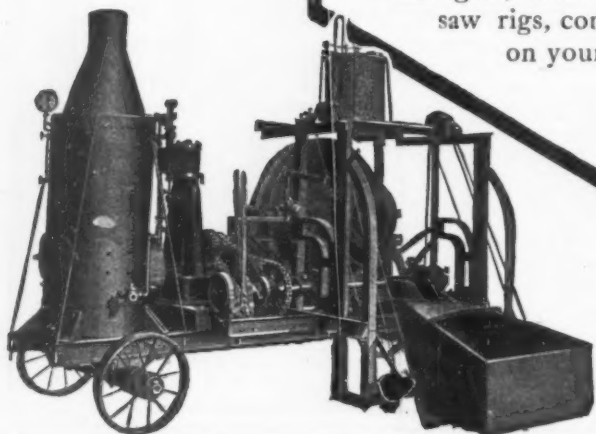


WE WILL
GUARANTEE
PROMPT
SHIPMENTS

FRANKLIN STEEL CO., FRANKLIN, PA.

The Most Complete Stock of Contractors' Equip- ment in the South

Come
and
Look
Over
Our
Ware-
house



For the Accommodation
of Southern Contractors We
Carry in Our Atlanta Warehouse
a Very Complete and Carefully Selected
Line of Machinery.

Time was when the Southern contractor had to go to New York or Chi-
cago to SEE what he was buying. That's changed now. In our Atlanta ware-
house, address given below, we carry the biggest assortment of contractors' ma-
chinery that has ever been stocked South of the Ohio River—not only a complete line of

SMITH MIXERS

but also non-tilting mixers, bottom-dump buckets, clam-shells, concrete elevators;
side-gate, bottom-gate and rocker dump cars; carts, wheelbarrows, derricks, portable
saw rigs, contractors' pumps, etc. If you have not given us a chance of figuring
on your requirements, do it now. Catalogs on the asking.

The T. L. Smith Company

HARWELL PLACE, Near 605 Marietta St.
ATLANTA, GA.

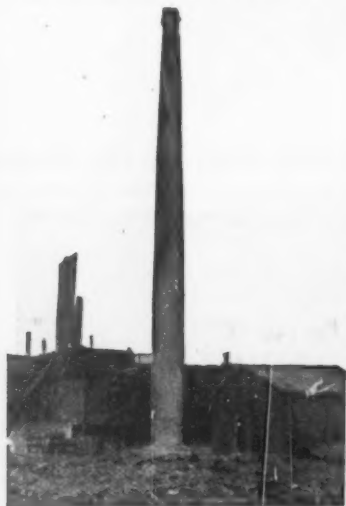
AGENTS IN ALL THE BIG
CITIES OF THE
SOUTH

Smith Mixer
with Steam
Plant and
Side-Loader

Home Office
Majestic Building
MILWAUKEE, WIS.

MORE THAN A THOUSAND WEBER REINFORCED CONCRETE CHIMNEYS

IN USE EVERY DAY
CONIFORM AND
CYLINDRICAL SHAPES



WEBER CONIFORM CHIMNEY
Height 185'; Inside Diameter at top 6' 6"
Built for
E. P. Burton Lumber Co., Charleston, S. C.
Built by The Weber Chimney Co., Chicago

SEND FOR LITERATURE
THE WEBER CHIMNEY CO.

1909 Republic Bldg., CHICAGO
New York Office, 95-97 Liberty St.

IF
you have a contract anywhere in the South,
we can reach you.

WASHED GRAVEL

(ALL SIZES)

C. P. LATHROP & CO., RICHMOND, VIRGINIA

REICHERT METAL FORMS

SAVE 3 CENTS per SQ. FT. on
CONCRETE WALLS

Reichert Manufacturing Co., Milwaukee, Wis.

Merchants & Miners Transportation Co.

"SPRING SEA TRIPS"

BALTIMORE

TO

BOSTON-PROVIDENCE
SAVANNAH-JACKSONVILLE

Through tickets to Northern and Southern
points. Fine steamers; excellent service; low
fares. Wireless telegraph.

Send for: Booklet.

W. P. TURNER, P. T. M., BALTIMORE, MD.

NEXT TIME
YOU ORDER
Wrapping Paper
SPECIFY

Nibro Kraft

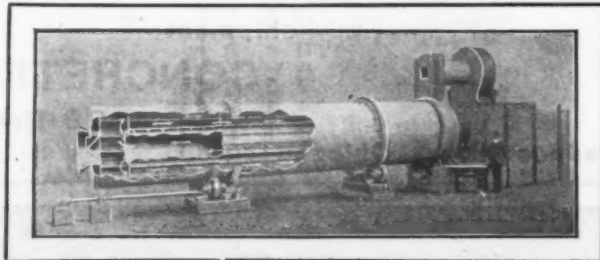


This Nibro Kraft trademark
ensures greater strength in less
weight of paper than you ordin-
arily buy— together with excep-
tional beauty of color and finish.
Result: The classiest, most-for-
your-money wrapping-paper ever
put on the market. Send for
convincing samples, details and
prices; also name of dealer in
your locality.

Berlin Mills Company
Portland, Maine
New York Office, 256 Broadway

WHY RUGGLES-COLES DOUBLE SHELL DRYERS?

for drying cement rock, clay, slags, coal sand, phosphates, marl, ores,
concentrates, glass sand, gypsum, bagasse, peat, tankage, fish scrap,
fuller's earth, brewers' grains, and scores of other organic and inor-
ganic materials?



BECAUSE OF DURABILITY

In Ruggles-Coles Dryers the cold and wet material is constantly
falling and being held on top of inner flue, which prevents over-
heating of this shell, while the outer shell is invariably cool and
opening of seams or shearing of rivets is unknown. Furthermore
the longitudinal expansion of inner shell is entirely taken care of by
swinging braces. The dryer is built of the best material by the highest
class of skilled mechanics. In the ordinary single shell dryer it is
obvious that the red-hot shell commonly seen means a large repair
bill and ultimate abandonment.

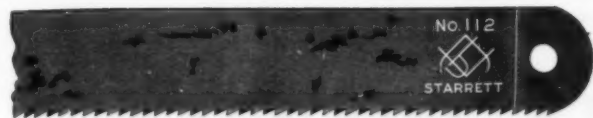
In addition to our six regular types of dryers we build special
dryers for drying materials of any description. Write us.

Ruggles-Coles Engineering Co.

McCormick Bldg., Chicago

50 Church St., New York

Atlanta, Ga., Hancock-Holmes
Foundry and Machine Works



When you sell a Hack Saw try to find out on what sort of work it will be used. Show your clerks what each kind of saw will do. This will add to your reputation and your sales.

Starrett Hack Saw Frames

will immediately be coveted by a good mechanic—he will see the many special features and the fine quality of workmanship and finish.

Send for free catalog 19EC.

THE L. S. STARRETT COMPANY
ATHOL, MASS., U. S. A.



New York
150 Chambers St.

Chicago
17 N. Jefferson St.

London,
36-37 Upper Thames St., E. C. B-14



Cement Block Machines

"U. S. STANDARD"



Our U. S. Standard machine is not only speediest and easiest to operate, but

Challenges the World

for range of work and variety of styles of blocks it can turn out. Can operate with wetter material than any other machine known.

F. P. Maydwell, Agent, Overlea, Md.

will gladly demonstrate its advantages. Ask for Catalogue K.

ASHLAND STEEL RANGE & MFG. CO.

ASHLAND, OHIO

U. S. Standard Continuous Mixers and Block Machines

Automatic
Improved
For All Materials.

DRYERS

Economical—Efficient
Great Capacity
American Process Co.
68 William St.
New York.

C.O. BARTLETT AND SNOW CO.
MAKERS OF CLEVELAND, O. U.S.A.
DRYERS CATALOG N° 16
GRADERS CATALOG N° 27
ELEVATORS AND CONVEYORS.



Monroe Bldg., Chicago.

The Basement of This Building is Waterproofed with Ceresit

Ceresit is a cream white paste which is dissolved readily in the water used in mixing concrete or cement mortar. By this method the Ceresit is uniformly distributed through the aggregates, thus filling the voids and giving greater density to the concrete and mortar, and rendering it absolutely impervious to water or dampness even when subjected to great hydrostatic pressure.

"Ceresit"

Waterproofing

Ceresit acts as a protector to concrete and cement—by keeping the materials dry it prevents disintegration by frost.

Ceresit itself cannot crack or be chipped off, as it is an integral part of the mass. It therefore has a quality of permanence not possessed by mere coatings or paints, which at best are cheap substitutes that prove costly in the final test of time. Ceresit is economical in labor, requiring no extra mechanical apparatus or mixer. Ordinary workmen can mix Ceresit by the simple directions that always accompany the product. Ceresit does not darken the concrete or cement. We guarantee Ceresit to be an efficient waterproofing for any job we undertake and direct, and to prove our faith we will put up a cash bond, if needed.

All we ask is that you give Ceresit a fair trial.

It will not disappoint the most exacting architect or engineer.

Ceresit is catalogued in Sweet's Index.

Ceresit is used in all civilized countries.

Agents wanted in unoccupied territory.

Ceresit Waterproofing Company

82 W. Adams Street, CHICAGO

BRANCHES:

1133 Broadway, New York,
1218 Chestnut Street, Philadelphia.

Ceresit Factories are located in Chicago, U.S.A., Westphalia, Germany, London, Paris, Vienna, St. Petersburg.

PLEASE CUT OUT THIS

REMINDER

to write for book "I" on
WATERPROOFING to

Ceresit Waterproofing Co.
82 W. Adams St., CHICAGO (7)

ANOTHER STEP

The development of the Reinforced-Concrete Dam has demonstrated that there was room for good thinking along the line of Hydraulics. There is still room.

The Hollow Core Wall for earth embankments or hydraulic fills, which is the subject of this advertisement, is so obvious at a glance that but little discussion is necessary.

Figure 1 shows the approximate line of saturation of the ordinary earth dam, the section being that of the famous Necaxa dam in Mexico, which sloughed out during construction. The control of the "line of saturation" has been the perplexity of engineers since earth dams were built.

It is well understood that the saturated underbody of an earth dam becomes a lubricated plane on which the whole structure is liable to slip. In other words, the ordinary earth dam is upside down as regards stability.

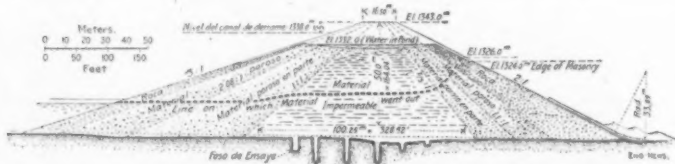


FIGURE 1.—LINE OF SATURATION AND SLIP, NEXACA DAM.



FIGURE 3.—EARTH DAM AT ALTOONA, PA., SHOWING EFFECT OF WASH.

Puddle walls of clay, concrete core walls, etc., have been and still are used and serve a certain purpose. But a clay wall is not impervious to boring animals or immune against shrinkage, and a concrete core wall, if massive, is very costly, and if light is liable to destructive distortion.

Furthermore, the material in the dam loses effective weight in proportion to its buoyancy. The degree varies with the nature of the material, but some loss always exists. Thus, if the material were supposed to be open gravel weighing when dry, say 120 lbs. per cubic foot, when submerged it would weigh only 84 lbs. per cubic foot, owing to the displacement of the water and allowing 40 per cent. of voids; and similarly with other material. The down stream prism of the dam being protected by the hollow core wall is *always* dry, and therefore always up to full efficiency and weight.

One of the salient features of the Ambursen Dam, which received instant recognition at the hands of engineers and laymen alike, was the facility afforded for absolute inspection of every square foot of its *interior*. We have now done the same thing for the earth dam and at no sensible increase of cost.

The Hollow Core Wall is built of reinforced-concrete, using a system of slip forms which admit of rapid and economical construction. It consists of two comparatively thin parallel walls spaced by ribs, which are monolithic with the whole structure and capable of withstanding the external earth pressure. The up-stream wall is keyed into the impervious sub-structure, whether of rock, clay, hardpan, etc., effectually intercepting the "creep" of water along the junction plane. In the illustrative section the sub-structure is shown as rock, although the occasions are comparatively rare when the immediate foundation of an earth dam is of this material.

The down stream wall need not be keyed in at all, or at most but slightly. If deep lying water-bearing seams are suspected they may be reached and tapped off by a series of drill holes along the bottom of the core wall.

Drain pipes with open joints and of large capacity are led from the core wall at frequent intervals out through the embankment, discharging into gutters on the down stream side. The joints are cemented as they approach

the toe of the embankment in order that they may not be clogged by penetrating roots.

It is obvious that any water which may find its way through the sub-material or which may come through any joints in the core wall, or from any source whatever, is absolutely intercepted by the hollow wall and drained away. *For the first time, therefore, we have secured an absolutely dry earth prism for the down stream section of the dam, thus materially increasing its stability.*

Moreover, the Hollow Core Wall penetrates the heart of the whole mass. It is well lit from above and is accessible by a permanent ladder-way of iron rungs extending to the bottom. Openings through the parti-walls at various levels give access to every foot of both surfaces. Any unsuspected leak may therefore be located, and, if possible, remedied. If it is not serious enough to be troublesome, or if it is incapable of being remedied, we at least make certain that it is powerless for harm.

The Hollow Core wall is arranged to be covered by plank tompions in the winter, so that the space is not filled with snow and ice.

Figure 3 is a photograph of the little earth dam in the famous Horseshoe Bend on the Pennsylvania road near Altoona. This dam is so located that it is subject to violent wind gusts down a gorge of the mountains. A few years ago such a gust pushed the water to the lower end of the dam and actually blew it over the edge of the dam. The result was the beginning of a severe wash as shown in the illustration.

Now in many locations, notably in Colorado and the States on the eastern slope of the Rocky Mountains, the slope of the land is such that the dams are in the southeast ends of the valleys. The prevailing heavy winds are from the northwest, and hence a wave run is set up which expends its full force on the dam and is a serious menace.

To meet this we carry the down-stream wall up somewhat above the level of the embankment and thus effectually intercept any wash that may occur from this cause or from the accidental over-spill of the dam due to extraordinary floods or carelessness in handling the waste gates. Such a device as this would have saved the dam that caused the Johnstown disaster and many others which have gone out under similar conditions.

It must not be hastily inferred that the Hollow Core Wall increases the cost of the dam. The chances are that it actually decreases it. This is too broad a subject to discuss in an advertisement, but it will be fully amplified in our circular on EARTH DAMS, which we will send on application.

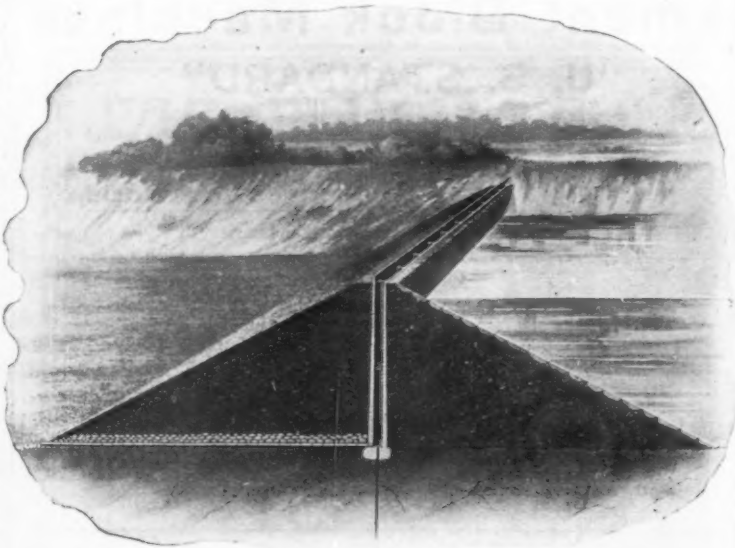


FIGURE 2.—EARTH DAM WITH HOLLOW CORE WALL AND DRAINS.

There is a modification of the Hollow Core Wall which relates particularly to Hydraulic Fill Dams, and will be made the subject of our next advertisement.

Respectfully submitted,

Ambursen Hydraulic Construction Company

Engineer--Constructors

88 Pearl Street,

BOSTON, MASS.

All inquiries from Canada should be addressed to Ambursen Hydraulic Construction Co. of Canada, Ltd., 405 Dorchester St. W., Montreal.

Clifton and Etowah Pig Iron

In a Class by Themselves

Do not take our word for it. Read what is said of our Irons by a concern recognized as an authority on Pig Irons and Foundry Mixtures.

We quote extracts from letters received from Matthew Addy & Company to us:

"While in Birmingham the other day, and glancing over the analysis of the current make of Clifton and Etowah, I was surprised at the uniform high grade of the irons. There has never been a better iron turned out at the Clifton and Etowah stacks than has been turned out of late, and there is no iron in the Birmingham District that is superior at present to Etowah, with its good Manganese and Phosphorus well under 1 per cent.

"Of course, Clifton is in a Star Class all by itself."

Etowah Iron is sold on Fracture or Analysis grade—Phosphorus under 1 per cent., Manganese .50 and up, Silicon as desired, and Sulphur uniformly low—even in cold grades.

Clifton Iron is sold only on Analysis grading—with Phosphorus under .70, Manganese 1 per cent. to two per cent., Silicon as desired, low in Sulphur.

Try them and prove their merits.

Alabama Consolidated Coal and Iron Company
Birmingham, Alabama

Furnace
 Foundry
 Gas

} **Coke**

Lump
 Washed Nut
 Washed and Sized Smithing

} **Coal**

TENNESSEE COAL, IRON & RAILROAD COMPANY

PIG IRON

FOUNDRY—FORGE—BASIC

"DeBardeleben"

"Eureka"

"South Pittsburg"

"Ensley"

"Alice"

OPEN HEARTH STEEL

RAILS

BLOOMS

BILLETS

SLABS

STEEL BARS

SHEARED STEEL PLATES

ANGLES

COAL

COKE

STEAM GAS BLACKSMITH DOMESTIC

FURNACE

FOUNDRY.

DOMESTIC

GENERAL OFFICES

Brown-Marx Building

.

Birmingham, Alabama

DISTRICT SALES OFFICES

New York

Buffalo

Cincinnati

St. Paul

Philadelphia

Boston

St. Louis

Portland

Cleveland

New Orleans

Chicago

Detroit

Pittsburgh

Denver

San Francisco

Export Representatives: United States Steel Products Co., New York



McALPIN HOTEL, Broadway and Sixth Avenue, between 33rd and 34th Streets, New York City, now in course of construction. F. M. Andrews & Company, Architects, Thompson-Starrett Company, General Contractors.

AMERICAN BRIDGE COMPANY OF NEW YORK

General Office: Hudson Terminal, 30 Church Street, New York

OFFICES IN PRINCIPAL CITIES

Structural Steel and Ornamental Iron

For Architects, Contractors, Owners
Anything from a Bannister to a Bridge

No Proposition Too Large or Too Small For Us to Handle

WE are prepared to promptly supply your wants in any form of Iron Work at a minimum cost.

Structural Steel for Buildings, Bridges, Girders, Roofs, Motor Supports, Monorails, etc.

Ornamental Work consisting of Store Fronts, Elevator Doors and Enclosures, Stairs, Fire Escapes, Fences, Railings, etc.

Original Designs—Accuracy Workmanship—Promptness

Our work commended by leading Architects and Contractors.

A large tonnage of Beams, Channels, Plates and Angles, for immediate shipment, always in stock. Write for our stock list—it will tell you all about the various sizes and shapes.

Let us know your needs. We can satisfactorily supply them. Estimates freely furnished.

Chesapeake Iron Works, Baltimore, Md.

BELMONT IRON WORKS

PHILADELPHIA AND EDDYSTONE, PA.

STEEL BRIDGES AND BUILDINGS

We have just issued CATALOG of representative structures furnished by us. Engineers, architects and prospective purchasers please address DEPARTMENT "M"

NEW YORK OFFICE, 45 BROADWAY, NEW YORK CITY

"Were I to Build

any number of houses, I would want nothing better than a Monitor. It requires less coal and less attention than any boiler I have ever seen."

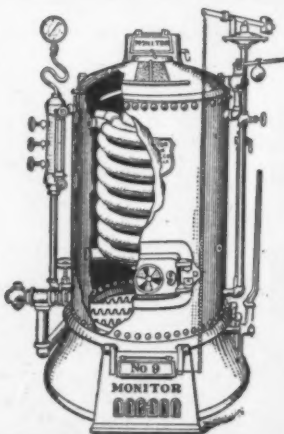
So wrote E. S. Hessler, merchant of Warnersville, Pa., after eight years' use of a Monitor Boiler No. 7.

Catalogue for the asking.

Monitor Steam Generator Mfg. Co.

Office and Salesroom—212 W. Fayette St.
BALTIMORE, MD.

U. J. BOSSLER, Manager
Home Office and Works, Landisville, Pa.



STEEL BRIDGES AND STRUCTURAL WORK

We are Engineers, Designers
and Manufacturers

CONTRACTORS FOR

Reinforced Concrete Bridges and all classes of substructure

AGENTS FOR

Corrugated Metal Culverts

Highway and Municipal Bridge Work a Specialty

We have up-to-date bridge and structural shops at Roanoke

Roanoke Bridge Co., Inc., Roanoke, Va.

BRANCH OFFICES:
ATLANTA, GA., JACKSONVILLE, FLA., CINCINNATI, OHIO, ROCK HILL, S. C.
Candler Bldg. Blum Bldg. 807 First Nat. Bk. Bldg. 307-8 People's Bk. Bldg.

MEMPHIS BRIDGE CO.

Designers, Manufacturers, Contractors
Bridges, Roof Trusses, Structural Steel and Iron
MEMPHIS, TENN.

CHATTANOOGA IRON & WIRE WORKS
CHATTANOOGA, TENN.
IRON AND WIRE GUARDS
FIRE ESCAPES SKYLIGHTS
IRON CURTLING IRON FENCE AWNINGS

IRON FENCE
LOW PRICE—HIGH GRADE—
CATALOGUE FREE.
DOW WIRE & IRON WKS. LOUISVILLE, KY.

Wm. F. Bockmiller, Pres. John G. Hullett, Sec.
Baltimore Office Supply Co.
106 S. Eutaw St., Baltimore, Md.

MANUFACTURERS OF
Stamps, Stencils, Seals, Metal Signs, etc.
Office and Bank Supplies.

Write for Prices.



FOR Iron, Brass and Steel FOUNDRIES

Molding Sand
Sea Coal Facing
Pure Silver Lead
Soapstone, Charcoal
Silica Mold Wash
Fire Brick and Clay
Ferro Silicon and Manganese
Outerbridge and Sitanium Alloy
Riddles, Brushes, Shovels
Cupolas, Blowers, Ladles
Sand Blast and Cranes
Magnetic Separators, Cranes
Etc., Etc.

J. W. PAXSON CO.

PHILADELPHIA
Branch at 219 St. Paul St., Baltimore
Ask for Second-hand List

RICHARD G. WOOD, President.

J. R. Jones, Vice-Pres. and Treas.

W. W. LUKENS, Sec. and Asst. Treas.

Alan Wood Iron and Steel Company

ESTABLISHED 1826

1421 CHESTNUT STREET - - - PHILADELPHIA

MANUFACTURERS OF

Basic Open Hearth Steel Billets, Blooms, Slabs, Sheet Bars. Universal
Mill Plates, and Black and Galvanized Iron and Steel Sheets and Plates

—SPECIALTIES—

Locomotive Jacket, Blue Annealed, Bath Boiler, Swede and Norway Sheets, Gas Holder, Corrugated, Best Bloom, A. W. clean,
M. F. Cold Rolled Sheets, Pickled and Cold Rolled Sheets, Electrical Iron and Steel, Best Last, Water Pipe and Light Plates,
"A. W. DIAMOND" and "A. W. RIBBED" PATTERN ROLLED STEEL FLOOR PLATES. Sizes furnished on application.

Snead Architectural Iron Works

LOUISVILLE, KY.

STRUCTURAL STEEL

ORNAMENTAL IRON

DIETRICH BROS.

Structural and Ornamental

IRON WORK

IRON and STEEL.


CUT, WIRE AND COATED NAILS

Reinforced Concrete Bars and Wire Mesh a Specialty

BALTIMORE, MD.

THE L. SCHREIBER & SONS CO.

CINCINNATI

STRUCTURAL STEEL  ORNAMENTAL IRON

BRANCH OFFICES
 NEW YORK CHICAGO PITTSBURG ATLANTA
 NEW ORLEANS SAN FRANCISCO RICHMOND

**The Cutler Mail Chute**

A recognized necessity in modern
 buildings of the office, hotel and
 apartment class.

The safe and prompt dispatch of
 mail from the upper stories of such
 buildings where it originates, is now
 of first importance.

Send for circulars and full informa-
 tion to the sole makers under the
 Cutler patents.

CUTLER MAIL CHUTE CO.
 ROCHESTER, N. Y.

Your Products Exhibited

In the
BUILDERS' EXCHANGE
 Baltimore, Md.

Will give you results in actual business.
 Exhibits on ground floor.

Write for information.

York Bridge Company
 BRIDGES, STRUCTURAL WORK
 YORK, PA.

H. V. BROCKMANN, Southern Agent

CHARLOTTE, N. C.

BRIDGES, MILL BUILDINGS, COAL TIPPLES
FARRIS BRIDGE CO.

PITTSBURGH, PA.

CHARLESTON, W. VA.

SCHERZER ROLLING LIFT BRIDGES

Fulfill Every Modern Requirement of a Movable Bridge and are Replacing Swing Bridges
 in this Country and Abroad. Write us for Information, Sketches and Estimates.

THE SCHERZER ROLLING LIFT BRIDGE CO.

Cable Address "Scherzer," Chicago. Main Office, 1616 Monadnock Block, Chicago, U. S. A.

CHAMPION BRIDGE COMPANY
 WILMINGTON, OHIO

MANUFACTURERS OF

Bridges and Structural Work

Southern Office—Atlanta, Ga.

Southern Office
 Continental Trust Bldg.
 Baltimore, Md.

Southwestern Office
 Hibernia Bank Bldg.
 New Orleans, La.

Western Office
 Pierce Bldg.
 St. Louis, Mo.

PHOENIX IRON CO.

PROMPT SHIPMENTS ON

STRUCTURAL STEEL SHAPES

FROM OUR MILLS OR FROM OUR LARGE STOCK

DESIGNS AND ESTIMATES FOR

ALL KINDS OF STEEL STRUCTURES

DELAY ELIMINATED

Works, Phoenixville, Pa. Main Office, 410 Walnut St., Philadelphia, Pa.

Other Local Offices { 110 State St., Boston, Mass.
 49 William St., New York

VINCENNES BRIDGE CO.

BRIDGES, STRUCTURAL WORK

VINCENNES, IND.

Memphis, Tenn. Address nearest office. Muskogee, Okla.

Capacity 100,000 Tons per Annum

BRIDGES, BUILDINGS
TURNTABLES

STEEL WATER TOWERS
 . . AND TANKS . .

VIRGINIA BRIDGE
& IRON CO.

General Offices—Roanoke, Va.

Contracting Offices { Memphis, Tenn.
 Atlanta, Ga.
 New Orleans, La.

Works { Roanoke.
 Memphis.
 Atlanta.

ESTABLISHED 1872
BINSWANGER & CO.
 1100 BROADWAY

WINDOW PLATE GLASS MIRRORS
 ART BEVELING SKYLIGHT

Richmond, Va. Memphis, Tenn.

U.S. BARKEEPERS FRIEND
METAL POLISH

Used and endorsed by the leading dealers
 Sold all over the world
GEO. W. HOFFMAN, Manufacturer
 594 E. Washington St. Indianapolis, Ind.



Ask for catalog 15M, illustrating a very complete
 line of embossed sheet metal letters and figures.
 Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.

G. A. SPIESS ART GLASS CO.
 11th Street and Clark Avenue
 ST. LOUIS, MO.

Makers of Art Glass, Beveled Plates
 in Lead or Metal, Tile Prisms, Zinc or
 Copper, Church & Memorial Windows.

HAROLD McCALLA
IRON AND STEEL

OF EVERY DESCRIPTION

Plain and Galvanized Bars, Hoops, Bands, Angles, Channels, Tees, Plates, Sheets
 and Wire. Cut Nails, Plain and Galvanized; Wire Nails, Plain, Coated
 and Galvanized; Barb and Twisted Wire, Painted and Gal-
 vanized. Hand Power Punches and Shears.

SHIPMENTS FROM STOCK OR MILL

Large Stock of Galvanized Bars, Bands, Hoops, Shapes, Etc.

444-446-448 Fairmount Ave. PHILADELPHIA

Patterson Blocks are the Best.

Wood Blocks for Manila Rope
 Steel Blocks for Wire Cable

All Hooks hand-forged from staybolt iron and flattened;
 all Sheaves self-lubricating.

Write for Block Catalogue No. 2.

W. W. PATTERSON CO.

EXPERT TACKLE BLOCK MANUFACTURERS

52 Water St., PITTSBURGH, PA.



This Map Shows Our Distributing Facilities

With warehouses fully stocked at NORFOLK, WILMINGTON, CHARLESTON, SAVANNAH, BRUNSWICK and JACKSONVILLE, we are able to supply our trade promptly with any quantity of

KING'S DIAMOND BRAND

FIBROUS PLASTER BOARD

KING'S WINDSOR

ASBESTOS CEMENT

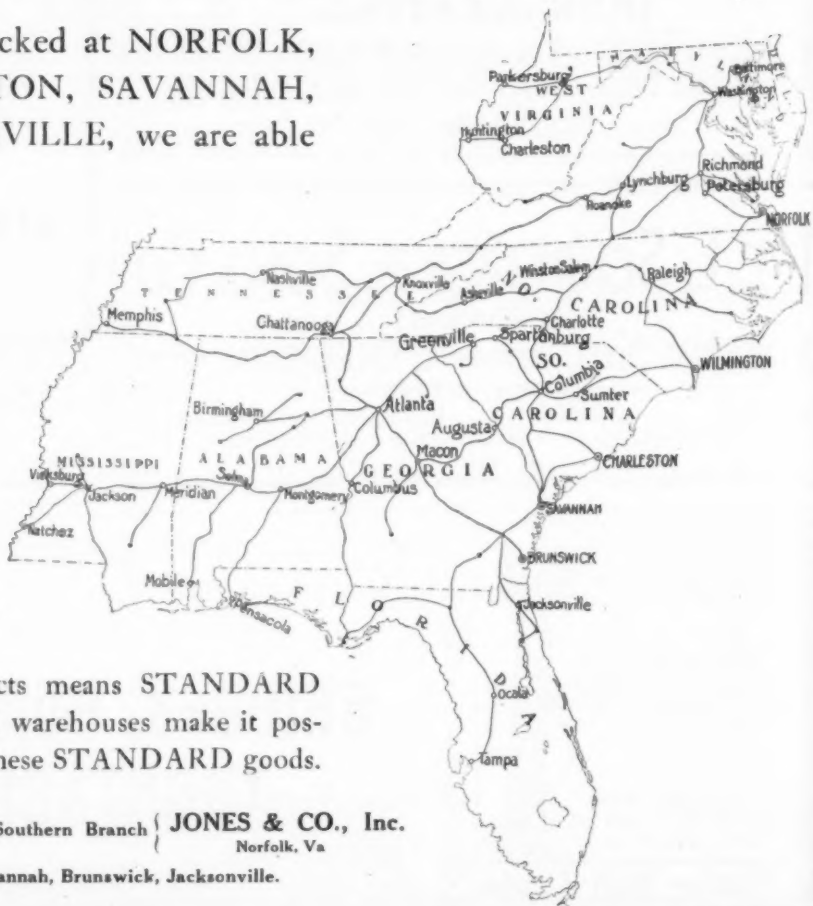
KING'S DIAMOND BRAND

PURE WHITE PLASTER OF PARIS

The name "KING" on plaster products means STANDARD quality. Our many and well distributed warehouses make it possible for every man in the South to use these STANDARD goods.

J. B. KING & CO., New York Southern Branch **JONES & CO., Inc.**

Warehouses—Norfolk, Wilmington, Charleston, Savannah, Brunswick, Jacksonville.



FLY SCREENS
METAL FRAME
REWIRABLE CINMANCO makes the method of securing wire cloth held by rounded corners which prevents cutting by vibration. Our Free booklet of interest to every Carpenter and Builder.

THE CINCINNATI MFG. CO.
1243-1249 W. 6th Avenue
CINCINNATI, OHIO

ESTABLISHED 1835.
DUFUR & Co.
309 N. Howard St.
BALTIMORE, MD.

WIRE RAILING, WIRE AND IRON GRILLE WORK, BANK AND OFFICE PARTITIONS, RAILINGS, GRILLES, ETC. WIRE CLOTH WINDOW GUARDS, STORE FRONT GUARDS, ETC. **Write for Catalog**

WICKET WIRE CLOTH

DUFUR, BAGGOTT & CO.
BRASS AND STEEL WIRE WORK

Of Every Description
BANK WORK ELEVATOR ENCLOSURES ELEVATOR CABS COUNTER RAILINGS GRILLES
WICKETS GUARDS PARTITIONS SKYLIGHT PROTECTORS, Etc.

225 W. Saratoga St. Baltimore, Md



Write for Catalogue M-27

State your wants

We are Manufacturers
BANK AND OFFICE RAILINGS
Plain and Ornamental Iron Work
of all Descriptions
J. E. Bolles Iron & Wire Works
DETROIT, MICH.

"ALL GRADES OF WIRE CLOTH MADE OF ALL KINDS OF WIRE"

THE NEW JERSEY WIRE CLOTH CO.
Manufactures
WIRE CLOTH
WIRE LATHING
POULTRY NETTING
WOVEN WIRE FENCING

Our Extensive Facilities Enable Us to Execute Large Orders Promptly at Low Prices

Roehling's Wire Used in All Our Products
Office and Works. TRENTON, N. J.

WE MANUFACTURE
Bank and Office Railing
Wire and Iron Window Guards
Elevator Cars and Enclosures
Wire and Metal Signs
Stable Fixtures, Iron Fencing, Iron Stair Work
FIRE ESCAPES
Ornamental Wire, Iron, Steel and Bronze Work
SEND FOR CATALOGUE
THE FRED. J. MEYERS MANUFACTURING CO.
HAMILTON, OHIO

McKENNA — PITTSBURGH

Two important items are foundation stones of every manufacturer
"QUALITY"—"DELIVERY"

We have the largest plant for the manufacture of Brass and Bronze Railings, Grilles and Structural Brass Work in the Pittsburgh District. Therefore our cost of production is the minimum.

GIVE US AN OPPORTUNITY TO QUOTE
McKenna Bros. Brass Co.

Our Display Fixture Department has a Catalog of "Neat-Nifty" Fixtures.
WRITE

Grilles
Door Saddles
Hand
Elevators
Kick Plates
Coat and
Hat Racks

Atlanta Terra Cotta Construction

The initial cost of Atlanta Terra Cotta may win the contract for you. You can be sure that Atlanta service will keep construction expenses down to the minimum.

Atlanta Service means that the Terra Cotta will reach the building on time and ready to be set as rapidly as it can be handled.

Atlanta Terra Cotta Company

Largest Architectural Terra Cotta Factory in the South

514 Third National Bank Building

Atlanta, Ga.

Works at East Point, six miles from Atlanta

Atlanta
Dallas
Norfolk
Richmond

Booklet on request

New Orleans
Charlotte, N. C.
Forth Smith, Ark.



Above buildings covered with J-M Asbestos Roofing.

The Cheapest Roofing

J-M Asbestos Roofing is lower in first cost than shingles, tin and slate, and cheaper than all other roofings when cost per year is considered.

Tin, iron and most prepared roofings are a continual trouble and expense, for they have to be coated or regavelled every few years. No coating, gravel or other protection is ever needed for J-M Asbestos Roofing. Its first cost is the only cost.

J-M Asbestos Roofing

consists of layer on layer of Asbestos (rock) Felt securely cemented together with Trinidad Lake Asphalt. This makes a ready roofing that is literally a pliable stone—with the everlasting qualities of stone.

Sparks or burning brands cannot ignite it. Rain, snow, heat, cold, salt air or chemical fumes cannot injure it.

This roofing is in good condition today on many buildings after more than a quarter century of service. J-M Asbestos Roofing can be used on any type of building.

Get it from your dealer. Sold direct if he can't supply you.

Write our nearest Branch for a piece of the curious Asbestos Rock and illustrated CATALOG No. 303.

H. W. JOHNS-MANVILLE CO.

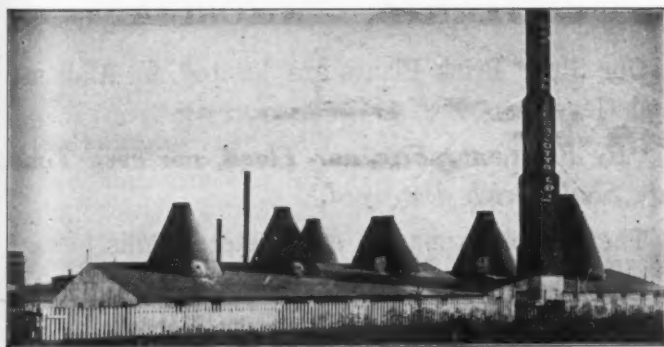
Manufacturers of Asbestos and Magnesia Products. Asbestos Roofings, Packings, Electrical Supplies, Etc.

Baltimore	Cleveland	Indianapolis	Milwaukee	New York	Pittsburgh
Boston	Dallas	Kansas City	Minneapolis	Omaha	San Francisco
Buffalo	Detroit	Los Angeles	New Orleans	Philadelphia	Seattle
Chicago					St. Louis 1875

METAL LOCKERS KEIGHLEY METAL CEILING & MFG. CO.

PITTSBURGH, PA.

BALTIMORE, MD. OFFICE
No 7 N. SHARP ST.



ONE VIEW OF OUR PLANT

Largest Ornamental Terra-Cotta Plant South

Seven kilns. Original, artistic terra-cotta. Railroad and water transportation enable us to fill Southern orders promptly and at least expense.

The Maryland Terra-Cotta Co., Wicomico and Baltimore, Md.
Clare Sts.

HERCULES PLASTER BOARD

IN PLACE OF LATHS AND PLASTER

Saves money in material, time and labor. Made in sheets 32x36 inches. Easily nailed to the studs and is at once ready for paint, paper, burlap, or a plaster finish.

WALL PERFECTION

Will not shrink, warp or crack. Shows no lath stains. Proof against FIRE, SOUND, VERMIN, HEAT and COLD. Used for partitions, attics, barns and poultry-houses. Write for sample and prices.

THE HERCULES PLASTER BOARD CO.

HAMPTON, VA.

Bar Track Fire Door Hardware

is absolutely the strongest, best and easiest to install.



Door Label

Originated and patented by us.

The style adopted as the standard of the National Board of Fire Underwriters.



Hardware Label

VICTOR MANUFACTURING CO.

NEWBURYPORT, MASS.

F. H. Jackson, 7 Clay St., Baltimore, Md.

HEATING, VENTILATING, SPRINKLING

COMPLETE ELECTRICAL INSTALLATIONS
WASTE CLEANING MACHINERY

AMERICAN MACHINE & MFG. CO.

Machinists, Contracting Engineers, Founders

Office and Works, CHARLOTTE, N. C.

OUR Show Rooms display the latest Artistic Designs in Mantels, Tile, Lighting Fixtures and Builders' Hardware.

When in Norfolk, pay us a visit. It will be worth your while.

We are pleased at any time to submit estimates, and if you will send us a List of your Requirements, or your Plans and Specifications, we will quote you promptly.

WRITE US TODAY

NORFOLK BUILDING SUPPLIES CORPORATION

95-97 Tazewell Street, 96-98 Brooke Avenue

NORFOLK, VIRGINIA

THE TEST OF THE ELEMENTS

Is the real test of all building materials. None stand "up" so well as brick, especially when you

BUILD WITH "SIBLEY-MENGE"

Excelling in Economy, Durability, Beauty and Comfort, "Sibley-Menge" gives the acme of all good qualities.

SIBLEY-MENGE BRICK & COAL CO.

MANUFACTURERS

842-5 Brown-Marx Bldg.

BIRMINGHAM, ALA.

We Know Brick. Do You?



The building owner will be safe if he uses our brick. If he asks his architect or his contractor they will say that

HYDRAULIC-PRESS BRICK

in color, density, maintenance of sharp edges and corners, contain everything that makes a building handsome and durable.

More than that, our product is easily superior in all points to most of the brick on the market.

Write for descriptive matter.

HYDRAULIC-PRESS BRICK CO., Central Nat'l Bank Bldg., ST. LOUIS, MO.
Colorado Bldg., WASHINGTON, D. C.
Address nearest office.

FRANK A. FURST President COLIN McLEAN Vice-President MICHAEL T. HORNER Secretary JOSEPH J. HOCK Treas. & Gen'l Mgr.

Sand

Building Concrete Paving

Washed Gravel

In Car, Scow and Barge lots

ARUNDEL SAND AND GRAVEL CO.

BALTIMORE, MD.

OFFICE--806 Fidelity Building.

WHARVES--Pier 2 Pratt St. and Foot of Fell St.

OCCONEE BRICK & TILE COMPANY

MANUFACTURERS OF CLAY PRODUCTS

MILLEDGEVILLE, GA.

Fireproofing, Building Tile, Flue Lining, Stove Flue Pipe and Tops, Thimbles, Wall Partitions, Tile, Farm Drain Tile, Fire Brick and Clay, Face and Common Building Brick, Sewer Pipe, Wall Coping, etc. CORRESPONDENCE SOLICITED.

Tapestry Brick
TRADE-MARK
REG'D U.S. PAT. OFF.

The Most Artistic and Permanent Building Material in the World.

Color Illustrated Books Free.

Refer to our large advertisement back cover of this paper of March 14.

FISKE & CO., Inc.

Promoters and Designers of Artistic Brickwork.
Sole Manufacturers of "Tapestry" Brick.

1720 Arena Building, NEW YORK

ALEX. A. SCOTT BRICK CO.

Manufacturers of

BUILDING BRICK

519 1/2 Prince St., KNOXVILLE, TENN.

Building Material

Pressed Brick (all colors), Ornamental Terra Cotta, Metal Lath, Corner Bead, Plaster, Fireproof Windows and Doors, Tile, Iron, Steel, Paint and material of all kinds. Write for Samples and Prices.

Southern Building Material Co., Norfolk, Va.

Brookhaven Pressed Brick & Mfg. Co.

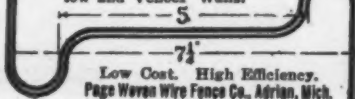
BROOKHAVEN, MISS.

FINEST FACE BRICK

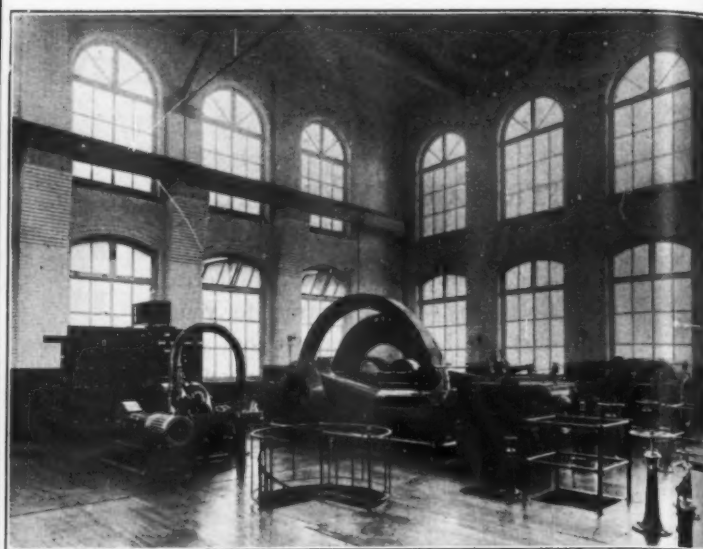
All Colors Prices Right

PAGE WALL TIES

An Ideal Bond for Face Brick, Hollow and Veneer Walls.



Low Cost, High Efficiency.
Page Wall Tie Co., Adrian, Mich.



HOLMES MILL, NEW BEDFORD, MASS.

American Enameled Brick

used for interior lining.

Why Not Protect Your Investment

by using the best material.

New Catalogue sent upon request

American Enameled Brick & Tile Co.

Head Office: 1182 Broadway, N. Y.

B. Mifflin Hood Brick Co.

Candler Building

ATLANTA, - GEORGIA

Our Shale Brick Plants are located in Alabama and Georgia.

"By Frost, nor Fire, nor Flood, nor even Time are Shale Brick destroyed."

They are as permanent as the eternal hills.

Our Shale Brick are now being delivered in all the leading Southern Cities, from Norfolk to San Antonio.

Experts say our Press Brick are perfect.

Our Wire Cut Impervious Brick will stand the severest moisture, ink and acid tests.

Hood's Orientals are rough texture, and produce as handsome and artistic wall effects, in design, texture and color, as can be woven into tapestry and rugs.

You are guaranteed quality, speed, reasonable prices and satisfaction.

Samples on request.

B. MIFFLIN HOOD BRICK CO.

Barrett Specification Roofs

J. T. Fargason Building,
Memphis, Tenn.

Roof on this building is 40 years old and still water-tight. Roofing applied by Bartholomew Roofing Co., Memphis



A Roof Which Outlasted a Brick Wall

THE building shown herewith was built in 1872 and roofed with pitch, felt and gravel along the lines now advocated in The Barrett Specification. The brick wall has recently required rebuilding, but in the work of renovation the roof did not require any attention.

Four times the roof has been exposed to fire; a neighboring hotel burned down and this roof was covered with falling sparks; another building, just across the street, was destroyed and this roof was swept with flame; two other fires, which threatened the destruction of the entire block, left this roof undamaged.

This roof has never leaked and never been repaired.

We do not claim that all Barrett Specification Roofs will last 40 years, although we can point to innumerable instances where this type of roofing has lasted over twenty years and is still in serviceable condition.

Barrett Specification Roofs are used on the largest factories and commercial structures in the country and on practically all the large office buildings of New York, Chicago and other large cities.

Copy of the Barrett Specification ready for incorporation into building specifications free on request.

TAR-ROK SUB FLOORS

COST: They cost less than piers and heavy timbers and extra excavation necessary to provide required air space beneath.

RIGID: They provide for absolute rigidity. No vibration is possible, regardless of character of machinery.

STRENGTH: The load they will sustain is limited only by the earth underneath.

DECAY: They protect absolutely against decay from ground dampness.

ADAPTABILITY: They are suited for any heavy construction where wooden wearing surface is desired.

SPECIAL NOTE

We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding.

If any abbreviated form is desired however the following is suggested:

ROOFING—Shall be a Barrett Specification Roof laid as directed in printed Specification, revised August 15, 1911, using the materials specified, and subject to the inspection requirement.

BARRETT MANUFACTURING COMPANY

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh,
Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.
Canadian Offices:—Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B., Halifax, N. S.



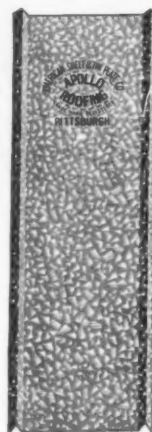
APOLLO ROOFING



FULL WEIGHT

Look for the stencils—Apollo on the galvanized—American on the plain and painted.

Send for our book "*Better Buildings*," just issued, giving full data and information on these high grade Formed Metal Roofing and Siding Materials.



American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, Los Angeles, Portland, San Francisco, Seattle



Don't let people tell you that the old iron nail was better than the modern steel nail

The old iron nail was too soft and uneven of texture. It split and broke, and you couldn't pull it without pulling it apart.

La Belle Cut Nails

the modern Open Hearth Steel product, meet every demand of the modern "better building" movement.

Strong, durable, *tight-holding*.

For out-door construction and packing cases they are without an equal.

All sizes and shapes for all classes of work.

La Belle Iron Works

General Offices: Steubenville, O.

Works:
Steubenville, O.

Works:
Wheeling, W. Va.

- ➡ To You—Mr. Architect or Engineer.
- ➡ To You—Mr. Contractor for Power, Heating, Plumbing or Water Works.
- ➡ To You—Mr. Builder or Owner.
- ➡ To You—Mr. Jobber.
- ➡ To You—Mr. Anyone Else Concerned.



Fig. 27.

It will be a decided advantage for you to get acquainted with

Kennedy Valves

If you know something about them, we want to tell you more; if you do not, we want to fully acquaint you.



Fig. 101.

Our line of valves is complete, of highest grade, and guaranteed. We can supply on short notice any quantity for heating, power, sprinkler and plumbing equipments.

We are ready to answer questions, to go into detail, and send printed matter to all interested. Let us do so today.

The Kennedy Valve Manufacturing Co.

Southern Department

Main Office and Works: 1022 E. Water St., Elmira, N. Y.

Branch Office and Warehouse: 51 Beekman St., New York.

Agencies: 660 Western Union Bldg., Chicago, Ill. and 622 Bessemer Bldg., Pittsburg, Pa.

Makers of Valves and Fire Hydrants

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO.



Puddled Iron is not expensive. We can furnish

Genuine Old Fashioned Puddled Iron Roofing

well painted, at about the same
price as galvanized steel

The puddled iron, used for roofing or siding, will outwear the steel two or three for one. We say this without prejudice because we make a great deal more steel than iron. When we build a new building at our works we roof it with iron because we know by so doing we are saving money. We believe there are no better galvanized steel sheets made than our famous *New Process* but we just as firmly believe that they are inferior to puddled iron when used for roofing purposes.

Our Genuine Puddled Iron Sheets are honestly made. We stand behind that statement with all of our business reputation. You are welcome to come and see them made at any time.

DOUBLE
REFINED
PUDDLED

IRON ROOFING

DISTRICT SALES OFFICES

NEW YORK CITY	PHILADELPHIA, PA.
BOSTON, MASS.	CHICAGO, ILL.
PITTSBURG, PA.	DENVER, COLO.
DALLAS, TEX.	SAN FRANCISCO, CAL.



WE MAKE ALL TYPES
"STAR" VENTILATOR
(FIRE - RETARDING)
MODEL "A"

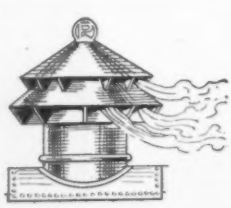
OPEN  CLOSED 

A GROUCH
is often the result of
foul air.
STAR
Ventilators
provide good, clean,
pure air.
"Old Mr. Grouch Disappears"

MERCHANT & EVANS COMPANY

Registered in the U.S. Pat. Office. **The Premier Metal House in America** Registered in the U.S. Pat. Office.

PHILADELPHIA
NEW YORK BROOKLYN CHICAGO KANSAS CITY
DENVER BALTIMORE

 **PULLMAN COWL**
The only scientific Roof Ventilator in the market.

WRITE FOR BOOK
WINDOW VENTILATORS WEATHER STRIP
THE PULLMAN AUTOMATIC VENTILATOR MFG. CO.
YORK, PA.

The East Bangor Consolidated Slate Co.
East Bangor, Pa.
Manufacturers of Genuine Bangor Roofing Slate
Also Blackboards and Structural Slate. Correspondence solicited.

Tin Painted **METAL SHINGLES** Galvanized
With Improved "Lock That Locks"
Watertight - Fireproof - Durable - Economical
Best and Cheapest Made By
The HYNDMAN ROOFING CO., CINCINNATI, OHIO

Red Oxide of Iron Paint

Our Red Oxide of Iron Paint is unexcelled for tin, iron and shingle roofs, railroad cars, bridges, barns, and any place where protection from the weather is desired. It is used by many of the large carriage and wagon manufacturers and paint grinders in the United States.

Let us send you a sample with prices.

Chattanooga Paint Co.

Chattanooga, Tenn.

WHAT DO YOU DEMAND
IN ROOFING?



ROOFING
BUILDING
MATERIAL

We've put ourselves in the user's place and are now making a prepared gravel roofing which fulfills all requirements. 'Twill pay you to look into its merits.

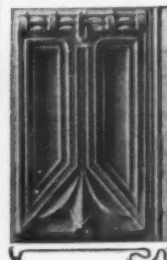
Armitage Mfg. Co.
RICHMOND, VA.

BURRISS
METAL SHINGLES
MANUFACTURED BY
JNO. T. BURRISS & SON
ANDERSON, S. C.

SLATE WE HAVE WHAT YOU WANT
In Roofing Slate, Slate Blackboards, Structural and Plumbers' Slate
Satisfaction Guaranteed in Quality and Price
Ask for Delivered Prices.
J. H. HOWER, Box M, Slatingson, Pa.
R. J. Kichline, Sales Agent

Roofing Contractors
All Kinds of Roofing Made and Laid
Standard Roofing Co.
TULSA AND MUSKOGEE, OKLA.

ROOFING SLATE
FOR SALE
Penna. Dark-Blue, Big-Red, Unfading Roofing Slate; also Blackboard and Structural Slate.
I also take contracts to lay slate per square by expert slaters direct from quarries.
W. M. BENNINGER, Walnutport, Pa.



"CINO" Metallic Shingles

Better because of attractive appearance, ease of laying and protection.

Add immensely to looks of a building. The only "laying" is to nail them in place. When laid the shingles form practically one solid, continuous piece. The lock and flange keep rain and snow out. The roof will last as long as the house.

Write for detailed information.

The Cincinnati Sheet Metal & Roofing Co.
30-40 MAIN STREET CINCINNATI, OHIO

 **Double-Interlocking**
ROOFING TILE
A clay tile not affected by cold or heat, nor by acids, gases or fumes. The deep double lock insures a water-tight roof. Furnished in natural red or glazes.

THE NATIONAL ROOFING TILE CO. - **LIMA, OHIO**
Southern Agents—ROPER & STRAUSS, 823 Forsyth Bldg., Atlanta, Ga.

A. DINIACO & BRO.
311 Berger Bldg., PITTSBURGH, PA.
407 Equitable Building, BALTIMORE, MD.
Contractors—Painting, Roofing and Repairing
Special Attention Paid to Resheeting and Repainting Old Buildings
Corrugated Iron Sheeting. All Work Guaranteed
Painting Rolling Mills, Blast Furnaces, Bridges, Stacks, &c.

PRODUCERS OF **E. J. JOHNSON**
38 Park Row, New York
Black-Green-Red-Purple
Quarries delivered any where
"The Highest Standard of Quality" our motto
Correspondence handled by practical painters

ROOF SLATE
SLATE BLACKBOARDS

Why buy several roofs for the same building?



If you put on a roof that needs renewing, repainting or repairing you are spending money unnecessarily; you are incurring annoyance unnecessarily, for a roof of

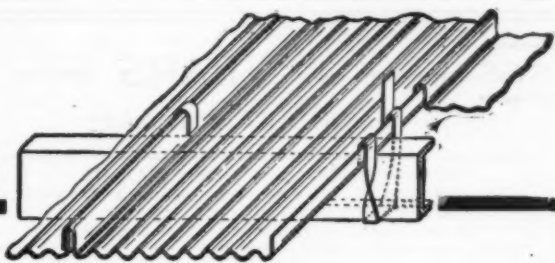
Genuine Bangor Roofing Slate

Outlives the building without paint or repairs.

There is no need to take our word for it, we have ample proof. We shall be glad to submit you all the vital facts about any roof you may be considering. They are presented in a concise, convenient roof guide that posts you in 15 minutes reading on any roofing on the market.

The Pamphlet is free. It will save you money. It will save you annoyance. Write for it now.

Genuine Bangor Slate Co.
Record Bldg., Easton, Pa.
Quarries, Bangor, Pa.



EDWARDS

Patented Pressed Standing Seam Corrugated Steel Roofing

Made in Number 16 to 28 Gauge, Painted or Galvanized

Can be applied on iron purlins without nailing, riveting or puncturing the metal.

The Ideal Fire-Proof Roof Covering for Factories, Foundries, Warehouses, Railroad Sheds, Auditoriums, Public Buildings, etc.

Descriptive booklet sent free on request

The Edwards Manufacturing Co.

"The Sheet Metal Folks"

IRON AND STEEL

411-431 Culvert Street CINCINNATI, OHIO.

Metal Ceilings, Metal Shingles, Metal Spanish Tile, Metal Culverts, Galvanized Cornice, Skylights, Ventilators, Ridging, Cresting, Etc.

A Storm-proof Roof

April is the month of rain storms. A leak means not only a bill for repairs to the roof, but often a larger bill for repairs to the interior.

Cortright Metal Shingles Never Leak

The finest driving rain or sifting snow cannot get under CORTRIGHT METAL SHINGLES.

Read what one user says:

Cortright Metal Roofing Co.
Gentlemen:

Patrickburg, Indiana.

***** The roofing which I did last year with your Cortright Shingles is all O. K. I am highly pleased with them. They are absolutely stormproof, and I can't praise them too highly.

Yours respectfully,

F. W. POPE, Carpenter and Builder.

The Reason

is due to two things, the overlap and sidelock.



Send for catalog and read full description.



**Cortright Metal
Roofing Co.**

Philadelphia and Chicago



A BUILDING
IN WHICH
BERRY BROTHERS'

LIQUID GRANITE

IS USED, IS A
CREDIT TO ARCHITECT, BUILDER
AND OWNER

SEND FOR LITERATURE

BERRY BROTHERS', LIMITED

New York, 262 Pearl St. Varnish Manufacturers Chicago, 25 Lake St.
Boston, 520 Atlantic Ave. Established 1858 Cincinnati, 420 Main St.
Philadelphia, 26-28 N. 4th St. Detroit, MICH. St. Louis, 112 S. 4th St.
Baltimore, 29 S. Hanover St. Canadian Factory, Walkerville San Francisco, 666-668 Howard St.

SUNLIGHT MILL WHITE

GIVES A SUPERIOR GLOSS FINISH



with vastly better results than lead and oil, a surface that radiates more light (and incidentally less heat) than any coating known; unaffected by great heat or cold. Engineers will appreciate its exceptional value for walls and ceilings of storage rooms, machine and operating rooms, etc. Samples furnished free. We are specialists in the manufacture of Paints for every use about your plant. Among our many specialties we enumerate the following:

Anchor Iron Oxide for Roofs, Pure Graphite, Red Lead, Lythite
(Cold Water Paint.) Boiler Front and Smokestack Black.

We publish a special booklet covering only paints and enamels that you would be interested in. Send for a copy.

THE A. WILHELM COMPANY

24 Stone Street, New York City, N. Y.

Factory: Reading, Pa.

The Enemy of Corrosion

"Cisco Led-Kote"

Impregnable to
Sulphurous and Sulphuric
Fumes

The Ideal Roofing
Economical Lasting

ASK

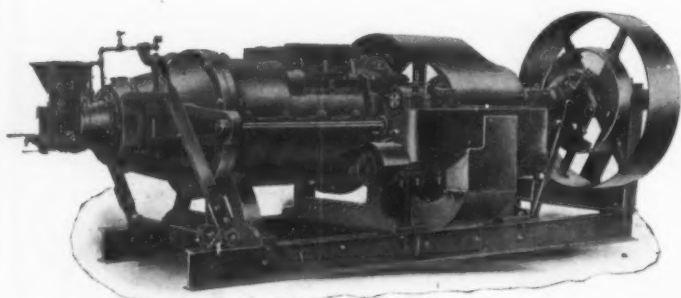
The Cincinnati Iron & Steel Co.

Cincinnati, U. S. A.

Iron Steel Machinery

STEELE'S BRICK MACHINERY

Especially Suitable for
Working Southern Clays



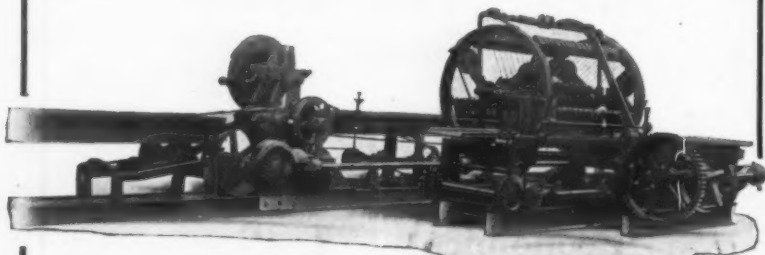
STEELE'S NO. 5 BRICK MACHINE.

The above cut shows new No. 5 Brick-Making Machine, our latest and largest machine, and represents 20 years' experience in the manufacture of brick-making machinery. It is especially designed for the working of Southern clays.

We make all sizes of brick machines of capacities from 6000 to 100,000 bricks per day. Each and every machine is perfect and simple in construction, and all are especially adapted to Southern clays.

The cut below shows our new Rotary Automatic Cutter and Side Cutter. These machines and our new No. 5 Brick Machine (illustrated above) are built on steel foundations.

If you want the best in Brick-Making Machinery we can interest you.



STEELE'S ROTARY AUTOMATIC BRICK CUTTERS
END AND SIDE CUT

WRITE FOR PRINTED MATTER

J. C. STEELE & SONS

STATESVILLE, N. C.

Manufacturers of Brick-Making Machinery

1865 — 47 YEARS — 1912

GOOD 47 Years Ago

"Pioneer Machinery is simply the best,
And used in Clay Products it stands every test;
Durable, high-class, efficient and true,
It does for its users, what others can't do."

We have Equipped such
Plants as

Capital City Sewer Pipe Co.,
Sacramento, Cal.
B. C. Pottery Co.,
Victoria, B. C.
Plymouth Clay Product Co.,
Fort Dodge, Iowa.
W. S. Dickey Clay Mfg. Co.,
Kansas City, Mo.
National Drain Tile Co.,
Terre Haute, Ind.
Shawmut Clay Co.,
Shawmut, Pa.
Don Valley Brick Works,
Toronto, Can.
Pomona Terra-Cotta Co.,
Pomona, N. C.
H. Stevens' Sons Co.,
Macon, Ga.

And in every city, town, village
and crossroads in the United
States where Sewer Pipe and
Clay Machinery is used.

Send for Catalogue
No. 29.

The Taplin-
Rice-Clerkin Co.
Mfrs.

The Machinery Folks
of
AKRON, OHIO,
U. S. A.



UNION Brick Machines

with
Pug Mill
combined

Four Sizes
Any Daily Capacity Required
Best Quality Brick
Greatest Economy Production

E. M. FREESE & Co.

GALION, O.

PRATT

Imperial

Acid Appliances
Special Heavy Castings
Fertilizer Works Machinery
Heavy Bronze Castings
Sugar Machinery

Pratt Engineering &
Machine Company
ATLANTA, GA.

Gerlach Modern Machines

Produce the Cheapest and Best

COOPERAGE STOCK
and **BOX SHOOKS**

Circular, Band and Cylinder Saws
SAW AND LOG TOOLS
THE PETER GERLACH CO., Cleveland, 6th City, U.S.A.

**FERTILIZER
MACHINERY**
A SPECIALTY

WRITE FOR PRICES. LOCOMOTIVE REPAIRS.
WILMINGTON IRON WORKS, Wilmington, N. C.

If you wish to keep posted on the progress
of the South, read the
MANUFACTURERS RECORD.
Price \$4 a year, or six months for \$2.

Southern Creosoting Company, Ltd. SLIDELL, LOUISIANA,
U. S. A.

Twenty-eight miles from New Orleans, La., surrounded by the finest
timber lands in the South. Facilities for shipping by water and rail.
CREOSOTED TIES, TELEGRAPH POLES, CROSS ARMS, TIMBER, PILES AND PAVING BLOCKS
Capacity, 22,000,000 feet per annum.
A. B. C. Code used. Cable Address, Creosote, Slidell, La.

S. E. NAYLOR & CO.
PITCH PINE LUMBER AND TIMBER
HARDWOOD AND BOX SHOOKS

Our specialties—Construction Material, Railroad Ties and West India Schedules
Domestic and Export.

Cable Address, NAYLOR Code, A. B. C., 4th and 5th, Southard's, Watkins.
34 and 35 Durham Bldg. Gulfport, Miss.

INTERNATIONAL CREOSOTING & CONSTRUCTION CO.
ADDRESS ALL COMMUNICATIONS TO
OFFICE GALVESTON, TEXAS
SEND FOR PAMPHLET

WORKS—BEAUMONT, TEX. TEXARKANA, TEX.
Capacity 75,000,000 FEET B. M. Per Annum

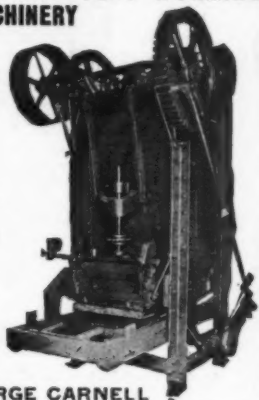
**WOOD
PRESERVING**

PHILA BRICK MACHINE WORKS
BRICK AND CLAY WORKING
MACHINERY

Power or
Hand
Machines

Complete
Outfit
Furnished

Send for
Catalogue



GEORGE CARNELL
1819 Germantown Ave. PHILADELPHIA

THE FERNHOLTZ BRICK MACHINERY CO.

MANUFACTURERS OF

DRY PRESS BRICK MACHINERY

Dealers in Brick Yard Supplies.
Boyle Ave. and Old Manchester Road,
ST. LOUIS, MO.

BRICK MACHINERY

Dry Press, Stiff Mud, Soft Mud
Drain Tile Machinery
SCOTT-MADDEN IRON WORKS CO.
KEOKUK, IOWA

CONTRACTORS FOR

**CREOSOTED WOOD BLOCK PAVING
EXCLUSIVELY**

Correspondence Solicited

Creosoted Wood Block Paving Co.

917 Maison-Blanche Bldg., New Orleans, La.

CREOSOTING

SOUTHERN WOOD PRESERVING CO.
Atlanta, Georgia

WOOD BLOCK PAVING

RAILWAY TIES AND TIMBERS
WOOD CONDUIT CROSS ARMS POLES

National Lumber and Creosoting Co., Texarkana, Ark.

Creosoting and Burnettizing

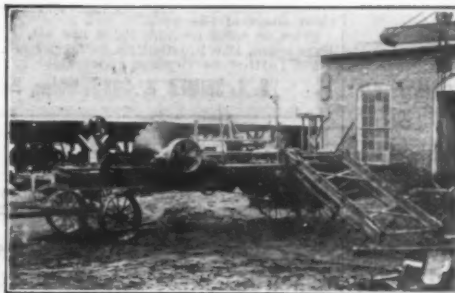
Manufacturers of Lumber, Ties, Timber, Piling, Poles and Paving Blocks

GULFPORT CREOSOTING COMPANY

GULFPORT, MISSISSIPPI

ALL KINDS OF RAILROAD MATERIAL, PILING, TELEGRAPH and TELEPHONE
POLES and CROSS ARMS TREATED BY THE FULL CELL PROCESS
CAPACITY TWO MILLION FEET B. M. PER MONTH
A NEW AND MODERN PLANT CREOSOTED WOOD PAVING BLOCKS

The Only Up-to-Date Way to Get Out



**CROSS
TIES**

and save
the waste
of
Stumpage

The Standard Cross Tie Machine Co. New Orleans, La.

NEWTON R. WILSON, Pres.
R. M. HALLOWELL, Vice-Prest. and Gen'l Mng'r.

E. T. BROUGH, Secy.
L. R. MILLARD, Treas.

E. A. WILSON, 2d Vice-Prest.
JOS. MUTH, Auditor.

Annual Capacity, 200 Million Feet

Paid Up Capital and Surplus, \$4,300,000

Industrial Lumber Co.

Calcasieu Long Leaf Yellow Pine Lumber

Railroad and Mining Timbers a Specialty

General Offices—ELIZABETH, CALCASIEU PARISH LOUISIANA

Elizabeth, Calcasieu, Oakdale and Vinton Mills
in Louisiana

Branch Offices: Chicago, 1520-23 Steger Bldg.
Wichita, Kansas; Monterey, Mex.

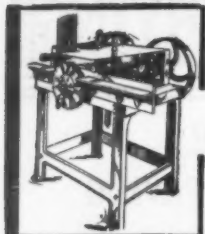
All agreements made contingent upon strikes, fires, accidents or causes beyond our control.
Manufactured according to S. L. M. A. specifications.

LATEST IMPROVED VENEER CUTTING MACHINES

With Impression Rolls for BASKETS, ORANGE BOXES, ETC., ETC.
Butter Dish, Berry Box, Fruit Basket, Orange Box, California Grape Basket and Truck
Barrel Machinery a Specialty.

CONTRACTS TAKEN FOR COMPLETE OUTFITS

Manufactured by
E. E. TITUS FOUNDER and MACHINIST Petersburg, Va.



40,000 LATHS PER DAY
ON OUR
IMPROVED LATH MACHINE

Just write us that you saw it and
want to see it saw
CHASE TURBINE MFG. CO., ORANGE, MASS.

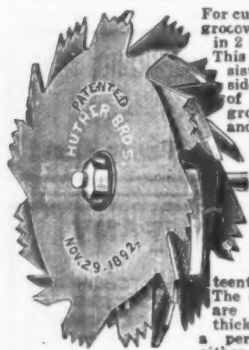
SAW MILL SUPPLIES

REPAIRS FOR LANE SAW MILLS } IN STOCK
BITS AND SHANKS } PROMPT
LANE SAW MILLS } SHIPMENTS
HOE SAWS }
ALL KINDS OF SUPPLIES }

SYDNOR PUMP & WELL CO., Inc.,

Dept. M. R.
RICHMOND, VA.

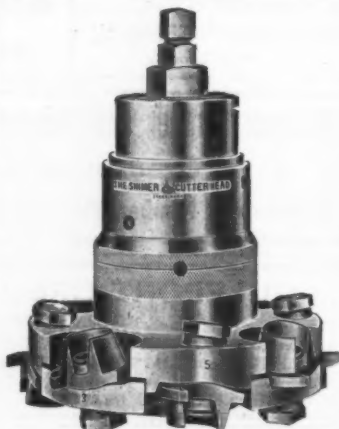
PATENT GROOVER OR DADO HEAD.



Can be used on any Circular
Saw Mandrel.

MUTHER BROS. SAW MFG. CO.
SAW MANUFACTURERS
1300 University Ave. ROCHESTER, N. Y.
California Saw Works, San Francisco, Cal.
Agents for Pacific Coast.

For cutting any width
groove from 1/8 inch
in 2 inches or over.
This groover con-
sists of two out-
side saws, each
of which is a
groover to itself,
and as many in-
side cutters
as required.
The inside
cutters are
made 1/16, 1/8
and 1/4 inch
thick, so that
any width
groove meas-
urable in six-
teenths may be cut.
The outside cutters
are made 1/8 inch
thick. It will cut
a perfect groove,
either with or cross
the grain, and will
not leave a rough
edge, as is the case with ordinary groovers.



Increase Working Capacity of Mill.

This cut represents the Shimer Limited
Cutter Head to match Flooring at the rate
of 150 to 200 lineal feet per minute. This
Head has self-centering and spindle clamp-
ing features which holds it securely to the
spindle and also insures all the cutters doing
their share of the work.

Price in solid section, \$52.50 per set. With
Expansion, like illustration, \$56.70 per set.
For further particulars address

S. J. SHIMER & SONS, Milton, Penna.

NASHVILLE HARDWOOD FLOORING CO.

Manufacturers Acorn Brand

Oak and Beech Flooring

NASHVILLE, TENN.

Beech Flooring for Cotton Mills Given Special Attention

MOST COMPLETE SAW MILL

BUILT IN THE SOUTH.

\$150 BUYS IT

GAINEVILLE IRON WORKS, GAINESVILLE, GA.

LUMBER STACKERS

SOULE STEAM FEEDS

**DOGS, LUMBER
BUGGIES, ETC.**

SOULE STEAM FEED WORKS

MERIDIAN, MISS.

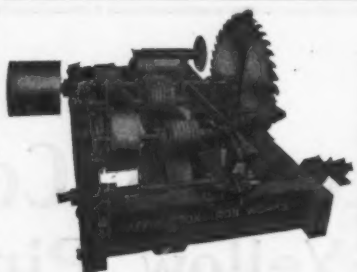
Write for Catalog "M"



Monarch Steel Stump Pullers

Will pull green stumps 7 feet in diameter
and will clear from 1 to 5 acres a day.
GUARANTEED 700 horse-power and against
breakage. ONLY Stump Puller factory in
the world making their own STEEL CAST-
INGS For catalog and discounts address

**M. R. Zimmerman Steel Co. Lone Tree, Iowa,
U. S. A.**



THE APPOMATTOX VARIABLE FRICTION FEED SAW MILL

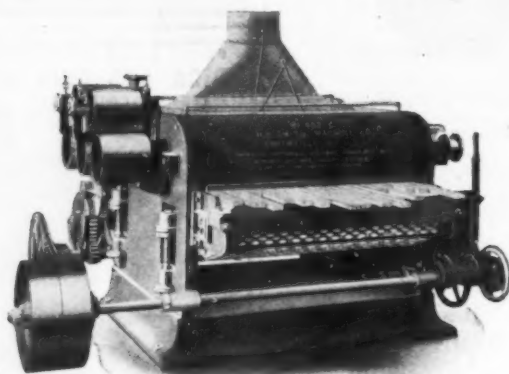
Thoroughly Adjustable in Every Way.
Made in two sizes.
Capacity 12,000 to 20,000 feet daily.
Can fit our feeds for any make mill.

Write for Descriptive Circular.

Appomattox Iron Works & Supply Co.
PETERSBURG, VA.



Woodworking Machinery



THE NEW SMITH PATENT SANDER WITH ENDLESS-BED FEED IN OPERATION.

As the Feed-Bed is faced with Rubber Cushions, which make it slightly yielding, it enables the operator to polish several pieces at a time, of slightly different thicknesses and various widths, hence the greater capacity of 200% to 600% as compared with other Sanders.

NOTICE—Concerning Sander Patents (See Cut above)

We take this means to inform intending purchasers of Sanders that our Endless-bed Sander is thoroughly protected by patents; that a user as well as a manufacturer of an infringing machine is equally liable to an injunction as well as a decree for damages and profits, and that it is our intention to enforce our rights to the fullest extent.

We have generic claims covering certain broad features that are vital to a Sander of the highest efficiency, among which may be mentioned as an example the Endless-bed Feed with Vertical Adjustment, in combination with Polishing Drums over the work or feed. And we have some seventy other claims relating to constructive details and to the Automatic Take-up Drums, so that it will be almost impossible for anyone to make a first-class Sander of this kind without infringing some of our patents.

We will add that we have been eleven years or more perfecting this important machine at great cost, but we are not charging our customers a cent because of our patents; we simply produce the best Sander which skill and experience can make, and offer it at a reasonable price, not taking into account the wonderful advantages of *quality* and *quantity* of work which our machine will do as compared with others.

The patents in question are:

No. 657,357, dated September 4, 1900.
No. 657,358, dated September 4, 1900.
No. 785,117, dated March 21, 1905.
No. 974,915, dated December 24, 1907.
No. 876,911, dated January 14, 1908.
No. 891,857, dated June 30, 1908.
No. 891,950, dated June 30, 1908, and patents pending.

We will be glad to submit a full description of our Patent Sander on application, and give such further explanations as will enable you to place your order intelligently.

Very truly yours,

H. B. SMITH MACHINE CO.

SMITHVILLE, N. J., U. S. A.

Branches:

New York

Chicago

Atlanta

San Francisco



Southern Mill and Factory Owners:

**The time to fight your fire
is at the start**

It can be more easily put out at the start than later. By having our

Fire-Alarm System

your employees are signalled as soon as a fire is discovered and quench it before it makes much headway.

Think of the life and property loss prevented, and also the reduction in insurance.

We have been making fire-alarm signals for 40 years, and our apparatus has indirectly saved millions of dollars for progressive manufacturers, and you can't buy a more reliable, satisfactory system anywhere in the country.

LET US HEAR FROM YOU

Southern Towns:

**You Will Be More Secure
With Our Fire-Alarm System**

A local fire-alarm system not only brands a town up-to-date, but gives its inhabitants a greater feeling of security than old-time conditions, and also enables them to obtain a more favorable insurance rate.

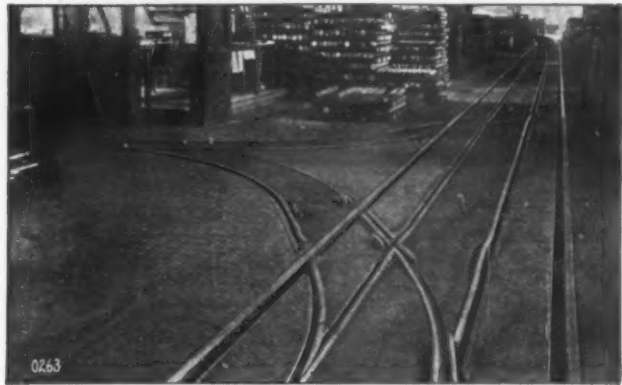
Our System, besides being modern-priced, is thoroughly reliable. We have been making fire-alarm boxes for forty years, and our experience enables us to offer Southern towns a system that can't be surpassed.

We want to confer with Southern town officials—give them names of users so they can investigate for themselves, and also go into details with them.

**THE BALTIMORE MACHINE
PRODUCTS CO.**

Relay Station P. O.

BALTIMORE, MD.



Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa.

The "Industrial" tracks run in the center of the standard (4 feet 8½ inches) gauge tracks. The interesting feature is that these switches and crossings are installed without cutting or notching the standard rails.

Our method reduces ex- penses and saves time in handling material

A Hunt Industrial Railway system is an economical and satisfactory method of handling coal from the storage pile to the furnaces, and it is not uncommon for such a system to save its entire first cost during the first year of its operation. Almost invariably the direct saving each year equals at least a third of the entire cost of the installation.

The railway system is immediately available for peak loads, but involves no expense when not in use. The cars can be adapted in size and shape to hold almost anything that men can handle, and the car platforms can be made to best suit the carrying conditions as well as for ease of loading and unloading. Where desirable, the material may be kept on the car during manufacturing processes, the car being used as a platform and thus saving the labor of re-handling. Accurate weight of material while on the cars is easily obtainable by putting a platform scale at any convenient point in the railway system.

If you have material to move, no matter what the nature, quantity or the irregularity, the Hunt Industrial Railway, with tracks built on the unit system, running gears of cars and track built for safety in rounding curves of as small as 12 feet radius, will do the work with ease, economy and absolute certainty.

Tell us your conditions and we will advise what economies may be expected from a Hunt Industrial Railway System in your own plant.

Write for descriptive catalogue RI.

C. W. HUNT COMPANY

Manufacturers of "Industrial," Cable and Automatic Railways; Electric Locomotives; Coal Handling Machinery; Conveyors; Transmission and Hoisting Rope, Etc.

WEST NEW BRIGHTON, N. Y.

New York City, 45 Broadway

Chicago, 1616 Fisher Building

Washington, D. C., Evans Building

San Francisco, Monadnock Building

When you want anything in

CASTINGS

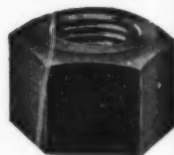
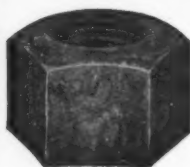
let us submit estimates. We are in position to promptly furnish brass and iron castings of any size and in any quantity, and we want to hear from those in the market.

We are also in position to furnish structural iron and steel work for all purposes, and design and build new machinery.

We cover practically the entire field in iron and steel work. Questions promptly answered and other information gladly given.

ROANOKE IRON WORKS, Inc.
ROANOKE, VA.

Engineers — Founders — Machinists

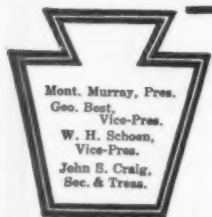
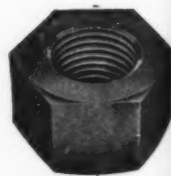


"MILTON" NUTS

FOR EVERY PURPOSE

**The Milton Manufacturing
Company**

MILTON, PENNSYLVANIA



Keystone Bronze Co.

MANUFACTURERS OF
**COPPER—BRONZE—
ALUMINUM CASTINGS**

FOR

ROLLING MILLS AND STEEL WORKS

Copper and Bronze Tuyeres, Coolers and Bosh Plates,
Mill, Locomotive and Car Bearings, Machinery Cast-
ings—Babbitt Metals, etc.

Knox Patented Water Cooled Open Hearth Doors, Frames, etc.

KEYSTONE BRONZE COMPANY, 38th and 39th Sts., Pittsburgh

ALSO OPERATING PLANTS OF

Brighton Brass & Bronze Co., New Brighton, Pa.

Best Mfg. Company's Bronze & Copper Dept., Pittsburgh

Galvanizing Plants (Complete)

There are good opportunities for establishing Galvanizing Plants in the South.

We have had over thirty years' successful experience in building such plants, and can put you "right" on the proposition.

Millard F. Wilfong Iron Works Co.

MANUFACTURERS OF

Annealing Boxes, Galvanizing Pots and Kettles, Galvanizing Machinery, Galvanizing Plants, Dressing Kettles, Smelting Kettles and Tinning Kettles

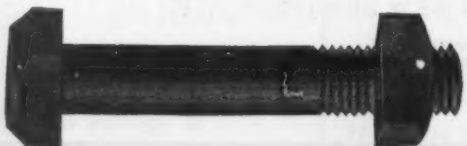
Kettles and Boxes Carried in Stock

PHILADELPHIA, PA.



1863

Track Machine
BOLTS
Carriage Lag



**OLIVER
IRON and STEEL
COMPANY**

Tel. and Tel. Pole Line Hardware
PITTSBURGH, U. S. A.

1912



Rivets Crow Bars
Nuts Wedges
Washers Forgings



Malleable Iron Castings of Highest Quality

Annual Capacity 25,000 Tons.

Castings of all descriptions furnished.

Send Blueprints or Samples for Estimates.

MISSOURI MALLEABLE IRON CO.
EAST ST. LOUIS, ILL.

C. G. HUSSEY & CO.

Pittsburg Copper & Brass Rolling Mills, PITTSBURGH, PENNA.

COPPER

Sheets, Plates, Rivets, Bars, Nails, Conductor Pipe, Eaves, Trough, Elbows, Shoes, Ferrules.

RELIANCE STEEL CASTING CO.

Manufacturers of

HIGH GRADE STEEL CASTINGS

Up to 20 Tons in Weight

28th and Smallman Streets

PITTSBURGH, PA.

J. C. H. GALVANIZING COMPANY

1110-14 N. Front Street, Philadelphia

Galvanized Rounds, Half Rounds, Half Ovals and Chain
In Stock and for Immediate Shipment

Special Attention to Jobbing Work. Large Work a Specialty. Inquiries Solicited

ELEPHANT BRAND

THE PHOSPHOR BRONZE SMELTING CO.

2200 WASHINGTON AVENUE, PHILADELPHIA, PA.

ELEPHANT BRAND *Phosphor Bronze*
INGOTS, CASTINGS, WIRE, SHEETS, RODS, Etc.

— DELTA METAL —

IN BARS FOR FORGING AND FINISHED RODS
ORIGINAL AND SOLE MAKERS IN THE U. S.

REG. U. S. PAT. OFF.



ROBINS BELT CONVEYOR

The Robins Belt Con-
veyor was the original
and is today the standard
of this type of conveying
machinery.

It is successfully and
economically conveying
ore, rock, coal and
similar materials under
the most trying condi-
tions of service.

CONVEYING, ELEVATING AND
HOISTING MACHINERY.ROBINS COAL AND COKE
CRUSHERS.We carry a complete stock of Chains
and Sprockets. Write for monthly
BulletinsROBINS CONVEYING BELT
COMPANYTHOMAS ROBINS, President C. K. BALDWIN,
Chief Engineer

General Offices-13 Park Row, New York

Chicago: Old Colony Building.
Spokane: United Iron Works.
San Francisco: The Griffin Company.
Toronto: Gutta Percha & Rubber Mfg. Co.
Glasgow, N. S.: Brown Machine Co., Ltd.

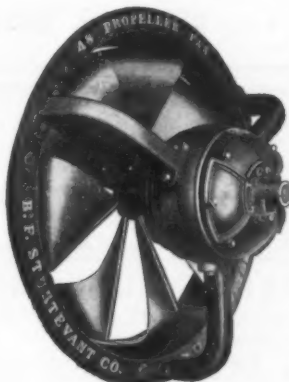
The Remedy

For that hot and stifling room is a

Sturtevant

Electric Propeller Fan

Also Made for Pulley Drive



They increase output, reduce
sick leave, and raise efficiency of
workers by keeping the air fresh
and cool.

Easily and cheaply installed,
the first cost is small.

The scientific construction and
design of the fan blades makes
possible the moving of immense
volumes of air at small expendi-
ture of power.

These fans are invaluable for
use in work rooms, offices, kit-
chens, billiard halls, and in all
places where heat, smoke or
fumes are to be removed.

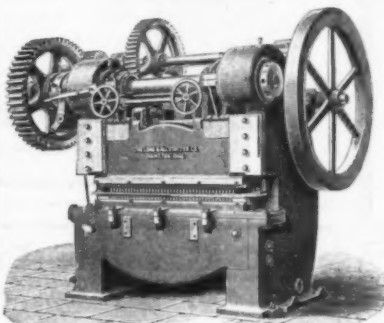
Our engineering staff are always ready to make sug-
gestions if you will inform us of the conditions to be
met, the size of the room, etc.

Bulletins 146 N and 149 N describe these fans.

B. F. Sturtevant Co.
Hyde Park, Mass.

Offices within calling distance from all large centers.

No. 859



MULTIPLE PUNCH

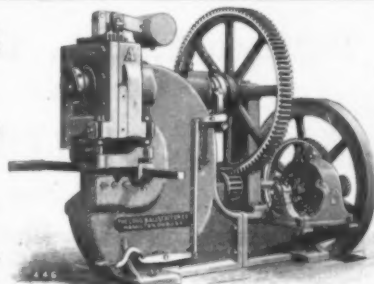
Power Punches

Single, Double, Vertical, Hor-
izontal
Belt, Steam, Electrically Driven
for any number of holes

Power Shears

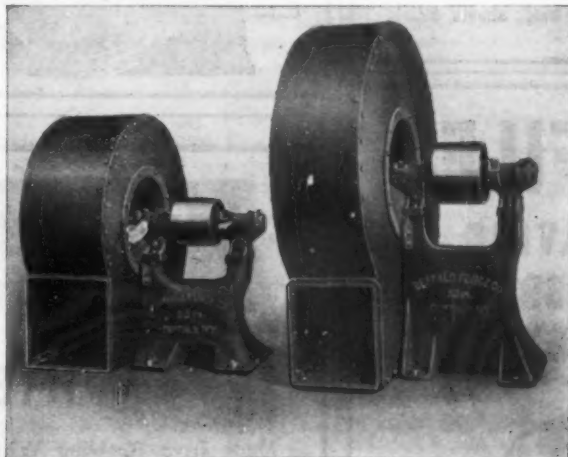
For Bars, Plates, Beams, Angles
Channels, and Special Shapes

Write for Catalogue



BAR IRON SHEAR

The Long & Allstatter Co., Hamilton, Ohio



**Buffalo Mill Exhaust
FANS**

\$1850.00

At \$35.00 H. P. per year the above figure
represents the power saving effected by one
80-inch Buffalo Slow Speed Exhaust Fan.
It was installed for Messrs. Dodge & Bliss,
North Tonawanda, N. Y., and took the
place of two ordinary 60-inch exhausters of
another make. These are real slow speed
fans, standing out as distinct from the great
many "would-be" Slow Speed Fans on the
market. Their applications are almost un-
limited. Fumes, smoke, gases, shavings,
saw-dust, cotton, grain, abrasive dust, bark,
etc., are conveyed with ease.

Our free engineering service often insures
a double saving by improving the arrange-
ments of piping and fans.

Write for Circular No. 157-Q.

BUFFALO FORGE CO.
BUFFALO, N. Y.

Philadelphia Charlotte Cincinnati St. Louis

SPECIAL SCREWS AND PARTS

— FOR —

**Fire Arms, Typewriters, Sewing Machines,
Electrical Instruments, etc.****MILLED FROM THE SOLID ROD****Low Prices for High Quality Goods Where
Wanted in Large Quantities****DRAPER COMPANY, - - HOPEDALE, MASS.****The Time to Put Out a Fire
is When It Starts.****GRINNELL
AUTOMATIC SPRINKLERS**

have put out 10,000 fires before they had a chance to gather headway, and kept 5000 others from spreading.

GENERAL FIRE EXTINGUISHER CO.**EXECUTIVE OFFICES: PROVIDENCE, R. I.**

Plants, Warehouses and Offices in Principal Cities of the United States and Canada.

40-44

**ROLLING ^{Steel and Wood} DOORS
PERMANENT SKYLIGHTS
THE KINNEAR MANFG. CO. COLUMBUS, O.****High Grade Mill Work and Interior Trim
Hazlewood, Oak, Cypress and Pine
ESTIMATES MADE PROMPTLY
MASSEE & FELTON LUMBER CO.
MACON, GA.****METAL WINDOWS
OF ALL KINDS AND FOR ALL USES
Tested and Approved by Underwriters Laboratories
VOIGTMANN & COMPANY****CHICAGO, 445-459 W. Erie Street**

Southern Representative—S. R. HEWITT, 1202 Candler Bldg., Atlanta, Ga.

Send for Catalogue

NICHOLSON FILES**MEAN A SAVING IN
TIME, LABOR AND
EXPENSE****NICHOLSON
U.S.A.****NICHOLSON FILE CO., PROVIDENCE, R. I.****YELLOW STRAND WIRE ROPE**

See advertisement on page 21

YELLOW STRAND never betrayed a confidence**BRODERICK & BASCOM ROPE CO., 809 N. Main St., ST. LOUIS, MO.**WORKS { St. Louis, Mo.
Seattle, Wash.BRANCHES { 76 Warren St., New York
Seattle, Wash.; San Francisco**UNCLE SAM INSTALLED**

Dahlstrom Metallic Doors and Trim—after thorough tests—in the Battleships Florida and Utah.

To properly fireproof the interior of buildings it is just as important to use

Dahlstrom Metallic Doors and Trim

A fireproof building in fact (not only in name) is one where all inflammable materials have been replaced by the Dahlstrom Steel Products.

PRINTED MATTER UPON REQUEST.

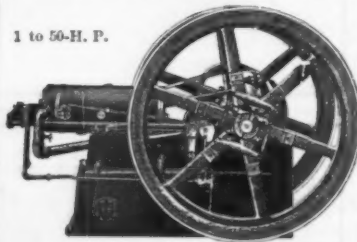
DAHLSTROM METALLIC DOOR COMPANYExecutive Offices and Factories: 73 Blackstone Ave., Jamestown, N. Y.
Branch Offices in all Principal Cities**MOTORS**

You may have had trouble with motors burning out caused by the coils getting soaked with oil drawn in along the shaft from the bearing.

This is absolutely prevented in Allis-Chalmers Motors by a special construction of the shaft and bearing.

**Allis-Chalmers Company
Milwaukee, Wis.****IHC Gasoline Engines and Tractors**

1 to 50-H. P.



High-grade four-cycle engines, made in every style, horizontal and vertical, air and water cooled; stationary, portable and mounted on skids. Operate on gas, gasoline, kerosene, naphtha, distillate, or alcohol. Kerosene-gasoline tractors, 12, 15, 20, 25 and 45-H. P.

I H C engines are general purpose machines for use on farm, in mill, factory or railroad equipment. I H C tractors are used for plowing, hauling, road grading—for every form of drawbar and belt work. Catalogues and full information on request.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)

708 Harvester Bldg.

CHICAGO U.S.A.

ROEBLING**WIRE ROPE**

Made from Roebling Wire drawn from carefully selected and tested metals and stranded into rope in accordance with designs shown by long experience to be best adapted for satisfactory service.

JOHN A. ROEBLING'S SONS CO.SO. OFFICE, Empire Bldg., ATLANTA
WAREHOUSE IN SAVANNAH**Trenton, N. J.**

MANUFACTURERS RECORD

A WEEKLY SOUTHERN INDUSTRIAL, RAILROAD AND FINANCIAL NEWSPAPER

Trade-Name Registered in the U. S. Patent Office

Vol. LXI. No. 13.
WEEKLY.

BALTIMORE, APRIL 4, 1912

\$4.00 A YEAR.
SINGLE COPIES, 15 CENTS.

Manufacturers Record

PUBLISHED EVERY THURSDAY BY THE
MANUFACTURERS RECORD PUBLISHING CO.,
BALTIMORE.

RICHARD H. EDMONDS, President.
FRANK GOULD, Vice-President.
VICTOR H. POWER, Treasurer.
I. S. FIELD, Secretary.

RICHARD H. EDMONDS,
Editor and General Manager.

EDWARD INGLE, Managing Editor.

ALBERT PHENIX,
General Staff Correspondent.

Branch Offices:

New York—52 Broadway.
Boston—643 Old South Building.
Chicago—1116 Fisher Building.
St. Louis—543 Century Building.

Subscription, \$4 a year
(payable in advance) to United States,
Mexico, Cuba, Porto Rico, Hawaii and
the Philippines.

To Foreign Countries (including Canada) in
the Postal Union, \$6.50 a year.

[Entered at the Baltimore Postoffice as sec-
ond class matter.]

BALTIMORE, APRIL 4, 1912.

FOR TEXAS.

The crop contests of the Texas Industrial Congress, held last year with such gratifying results and repeated this year upon a wider scale, seem destined to become a permanent factor in the material development of the State. This year, although applications will be received until April 1, more than 1200 entries in the contests have been received from 150 counties. The prizes, aggregating \$10,000 in cash, ranging from \$5000 to \$25, are for results in demonstrating conservation, rotation and diversification on model farms, for boys' and girls' corn clubs, for boys' and girls' cotton clubs, for forage crops and for irrigated forage crops. Business organizations, bankers and other individuals offered special prizes in connection with last year's contest, and recently President Mezes of the University of Texas has notified the congress that the University will offer 19 scholarships, exempting the holders from matriculation fees at the University, to winners in certain classes of the contest. These scholarships are to be good for four years from the time the winners enter the University, and they are limited to use under 21 years of age at the time the prizes are won, and will become effective whenever those to whom they are awarded are able to meet the age, scholarship and other requirements of the University.

Not a long while ago the MANUFACTURERS RECORD had the pleasure of commenting upon the eagerness with which the young men and women of Texas seize upon opportunities to work their way upon a self-sustaining and self-respecting basis through the State University. That institution is thoroughly grounded in the affections of the people of Texas, and its latest offer is

calculated not only to strengthen the campaign of the Texas Industrial Congress, but also to increase its own following.

RICHMOND AS AN INSPIRATION TO THE WHOLE SOUTH.

We give space in this week's issue to a rather elaborate article on Richmond, not so much for the benefit of Richmond as for the benefit of the whole South by using the remarkable growth of that city as an illustration of what can be done in other cities throughout the South.

Few other cities in the South suffered so disastrously from the war as Richmond. Around it surged all the struggles and the disasters of 1861-65. If any city in the South had cause to bemoan its fate, to lose heart and make but little effort for material upbuilding, surely Richmond was the place. But instead of following that course, the war had scarcely closed before the same indomitable spirit which maintained against overwhelming odds the struggle from 1861-65 found expression in material activities, and Richmond business people began the active upbuilding of their own city, and at the same time, with a broad vision of the future of the South, took the lead in the building of railroads and the development of industrial interests throughout the South. The results have been unique. Richmond itself has made great progress in manufactures and in finance, and has become noted far and near for the business ability and leadership of its people in developing Richmond, as well as in the broad development of many of the great enterprises of the South. Richmond's financial leaders are as well known in New York as in their own city. Their business ability and their integrity are everywhere recognized. And so Richmond has become noted as a place of strong men whose energy has done so much to revivify that city and the South. There are many remarkable illustrations in Richmond of how small enterprises have been developed into big ones, covering a range as wide as that from the making of pickles to the building of locomotives; illustrations of how boarding-houses and restaurants have grown to great hotels; how a chemist's invention for a family need has developed to a great industry which has made Richmond a big cattle market and created a demand for the product of this concern in almost every land under the sun. The founding and growth of these enterprises have been due to local money and local initiative. What has been done in Richmond should be an inspiration to the South. It should quicken thousands of people who read this story to similar achievements in other places. Richmond men have had the initiative to devise industries and develop enterprises, and the faith to back them with their own money, and in the doing of these things have created many vast business interests and

developed great wealth. Houston, Atlanta, Birmingham, Dallas, Fort Worth and other places in the South have commanded the widest attention for their remarkable progress, and justly so; but none of these cities quite equals Richmond as typical of the regeneration of the South by local men and local money, for Richmond has until recently drawn comparatively little on the outside world for enterprise or capital.

It is interesting to read this story of Richmond, because it is such a complete answer to the statements sometimes made that the people of the South have lacked energy and broad business ability, and that they have needed to look to other sections for the men and money to develop their communities. Richmond answers every adverse statement of this kind about the South's lack of energy, and demonstrates how its own people, when fully aroused, can develop by their own work and their own capital the opportunities to be found in every town and city in the South. And when local men and money do this kind of work, then sooner or later men and money from the outside pour into the town or city where this spirit exists.

TIGHT COOPERAGE STOCK.

Of 355,600,000 staves for cooperage produced in 1910 more than 304,000,000 were sawed staves, and of them 208,554,000 were white oak. The entire supply of white oak is in the United States, and that wood is regarded as the best for the manufacture of staves; so that, according to the Census Bureau, practically the entire Western Hemisphere depends upon this country for its supply of high-grade tight cooperage stock. And the main dependence for that supply is the South, as indicated in the following table showing the number of tight staves and of sets of tight headings produced in 1910:

States.	Staves.	Headings, sets.
Alabama.....	11,245,000	875,523
Arkansas.....	107,185,000	7,260,885
Florida.....	1,350,000	61,000
Georgia.....	940,000	90,000
Kentucky.....	35,782,000	3,068,332
Louisiana.....	20,334,000	1,658,466
Mississippi.....	42,905,000	1,895,888
Missouri.....	7,221,000	1,406,693
North Carolina.....	7,812,000	313,935
Tennessee.....	60,938,000	5,390,978
Texas.....	1,932,000	699,193
Virginia.....	2,509,000	107,074
West Virginia.....	31,185,000	191,405
Total.....	331,358,000	23,019,374
United States.....	355,600,000	26,073,754

Of the total 355,600,000 staves produced, 331,358,000, or 93 per cent., were produced in the South. Of the Southern production, Arkansas produced 107,185,000, or 32 per cent., Tennessee being second in the country, with 60,938,000; Mississippi third, with 42,905,000; Kentucky fourth, with 35,782,000, and West Virginia fifth, with 31,185,000.

Arkansas also led the country in the production of headings, the number being 7,260,885 sets, Tennessee being second, with 5,390,978; Kentucky third, with 3,068,332; Mississippi fourth, with 1,895,888, and Louisiana fifth, with

1,658,466 sets. The total output of the South, 23,019,374, was 84 per cent. of the country's production, 26,073,754.

A WARNING AS TO IMMIGRATION TO THE SOUTH.

Fortunately for the South, the Census Bureau published on April 1 figures showing the changes in the character of the foreign-born white population in Maryland between 1900 and 1910, coincidentally with the making of a provision by the Maryland Legislature looking to the financing of a movement for immigration to the South. The results, thus indicated, of ten years immigration to Maryland are a warning to the South against according support to any movement calculated to make the South a sharer in like results in the future. For, the situation in Maryland is typical of the situation in the whole of the North Atlantic seaboard, a situation which the South should avoid, and one which is bound to be intensified if the movements for immigration to the South be not regulated by individual Southern States through their own officials. In the ten years between 1900 and 1910 the foreign-born white population of Maryland increased from 93,144 to 104,174, or by 11,030, equal to 11.8 per cent., while in the same period the total white population of Maryland increased but 11.6 per cent. In the following table comparison is made of the number of foreign-born whites in the State in 1900 and 1910 by the countries of their birth:

Countries.	1910.	1900.	Increase per cent.
Russia.....	37,522	13,571	102.8
Austria.....	8,291	4,907	72.4
Italy.....	6,968	2,449	184.5
Hungary.....	2,039	323	631.2
Greece.....	463	86	382.3
Roumania.....	227	26	773.1
Total.....	45,510	21,371	113.9
Germany.....	36,602	45,852	*20.1
Ireland.....	9,691	13,863	*20.
England.....	5,178	5,257	*1.3
Scotland.....	1,955	2,128	*8.1
Canada.....	1,391	1,301	15.8
Wales.....	584	674	*13.5
France.....	550	539	3.9
Switzerland.....	453	330	41.2
Sweden.....	421	347	21.3
Norway.....	363	246	47.1
Denmark.....	236	176	34.1
Holland.....	203	239	*7.7
Unclassified.....	1,038	1,060	*2.1
Total.....	58,644	71,873	*18.3
Aggregate.....	104,174	93,144	11.8

*Decrease.

analysis of these figures shows that not only has the great increase in foreign-born population in Maryland come in natives of European countries alien to the spirit of other European natives which have made the United States what it is today, but also, and, indeed, consequently that this incursion has had the natural effect of reducing in Maryland the number of foreign-born of the stocks long identified with the making of American history.

Six countries of Southern Europe whose populations have been modified in a notable degree by African and

Asiatic stocks, Russia, Austria, Italy, Hungary, Greece and Roumania had 45,510 representatives in Maryland in 1910, an increase of 24,239, or at the rate of 113.9 per cent. over 1900. The tendency of the ten years is shown in the more than doubling of the Russian-born population, the near trebling of the Italian-born, which really means Sicilian-born; the more than quadrupling of the Greeks, and the increase of 531.2 per cent. to the number of Hungarians and of 773.1 per cent. in the number of Roumanians.

On the other hand, against this increase of 24,239 foreigners of alien stocks there was an increase of only 594 among natives of Canada, Denmark, Norway, Sweden, France and Switzerland, while there was a decrease of 13,803, equal to 19.9 per cent., among the natives of Germany, Ireland, England, Scotland, Wales, Holland and unclassified countries, making the total decrease 13,209, equal to 18.3 per cent.

It is only necessary to study the history of the sections longest affected by foreign immigration of the past twenty-five or thirty years to perceive that in Maryland has been repeated the process by which, elsewhere first, the growth of native white population is checked by the incoming of foreigners, both on account of a decrease in the birth rate among natives, who are unwilling to bring children into the world to compete with this class of labor, and on account of the practically enforced migration of natives to other parts to get away from the influence of this foreign element, and second, the desirable classes of foreign-born cease to use the paths taken by the undesirables, and also move on to other parts when these undesirables begin to mass in any center.

Of the total increase in Maryland of 24,239 of natives of the six Southern European countries, an increase of 19,984 was in Baltimore city, and the races dominant in this increase are the races responsible for such festers as the East Side of New York City and Lawrence, Mass., perpetual warnings for the South against co-operating with any movement looking to the cure of the festers by scattering the microbes over the South or likely to create festers in the South as a consequence of support of any immigration scheme that happens to be offered to the South, no matter how worthy may be the intent of men who are led to give it countenance.

In the methods used to bring into being the "Southern Settlement and Development Organization," and to obtain from the Maryland Legislature in the rush of its closing hours, when time was not allowed for a full consideration of the project, an appropriation conditional upon other appropriations, the MANUFACTURERS RECORD recognizes no material divergence from methods of the past ten years, finding expression in ephemeral "Southern" industrial parliaments, immigration conventions, congresses, etc., upon which quite a number of enthusiastic Southern men have been induced to waste their energy, time and money, and to be diverted from practical methods of inducing desirable immigration to the South. The suggestion in the striking figures of the changes in the character of the foreign-born population of Maryland in the past ten years is exceedingly timely, and should be influential in leading the South to be exceedingly careful, through its

State authorities acting by themselves, in assuring for itself only that class of immigration that will add to its strength instead of weakening it.

MAGNITUDE OF THE TELEPHONE BUSINESS.

While everyone after the least reflection realizes in some degree the tremendous expansion in the use of telephones, the real magnitude of the business cannot be impressed upon one's mind excepting through the medium of statistics such as are presented in the annual report of the American Telephone & Telegraph Co. The figures for the year 1911 have just been issued. They show that there are 6,632,625 stations—meaning places such as dwellings, stores, etc., where telephones are used—some of them, of course, having more than one set of instruments, and there are 749,906 more stations than there were a year ago, this increase being 12% per cent. Seven years ago there were little more than 2,500,000 stations; thus the number now represents an increase of considerable more than 150 per cent. as compared with 1905. In the gross earnings of the company there has been an increase of approximately 30 per cent. In the last three years, the total for 1911 being \$179,477,988, as compared with \$138,144,300 for 1908. There are more than 24,000,000 telephone messages sent every day, or 7,770,000,000 a year. The wire length is nearly 13,000,000 miles, of which more than one-half is under ground, and the new subway from Washington, via Baltimore Philadelphia and New York, to Boston, 450 miles, is completed, except for the drawing in of some cable. Going back as far as 1895, it is seen that there were then only 309,502 telephone stations and 675,415 miles of wires. There is no other country in which the telephone is so freely used as it is in the United States.

One of the most gratifying features of these statistics is the statement that the Washington-Boston subway has been completed and that more than one-half of the total telephone wire mileage is under ground. Of course the great bulk of the underground wire at present is in cities, but it is a foregone conclusion that the construction of a telephone conduit connecting the five large cities of the Atlantic coast will be followed by similar pieces of construction on other busy routes which are liable to damage and interruption by storms, especially those producing sleet, which is particularly injurious to overhead wires. Moreover, the burying of the wires is conducive to quiet through the exclusion of manifold noises that often cause a confusion of sounds especially annoying to telephone users, and more frequently in wet and windy weather. The service is generally improved by the use of conduits.

Among other things the report gives expression to the following significant opinions: "The discussion of the Government ownership of the wire companies is not likely to become anything more than academic, at least for the present.

"Even if the final conclusion should favor Government purchase of all wire plants, there would be no unfavorable consequences to the shareholders of the wire companies other than the obligatory liquidation. Any possible award for the property which the security-holders would be obliged to accept would give them better than current prices for their securities.

"There is hardly a telegraph or telephone system in the world now operated

by any Government which shows a profit even under accounting methods employed, and not one that would not show a deficit under accounting methods obligatory upon private enterprise, as can be learned from the department report of any Government telegraph system. Take the kind and quality of service, the extent of territories covered and the wages to employees, there is no service in the world cheaper than the telegraph and telephone service of the United States.

"There are possibilities fraught with all sorts of advantages to the public, which can be put in operation as fast as physical changes can be made in the plant, but those of the greatest advantage prudence would dictate postponing until after business 'restrictions' are made clearer or more definitely interpreted."

It is not at all probable that the people would reap any benefit from having the Government acquire control of and operate the telegraph and telephone lines of the country. On the contrary, it is assured that more progress will be achieved through a continuance of private ownership because there is a constant effort on the part of the companies to induce more business by the installation of improved equipment and the adoption of improved methods of operation. The public has frequently witnessed the results of this enterprise on the part of the corporations, and its existence is an incentive to inventors to investigate and experiment with a view to bettering telephone practice, but if the Government owned the lines the encouragement of inventive talent would be greatly diminished, if it did not wholly disappear. Progress demands that private enterprise shall continue to conduct our telephone and telegraph business.

AS VIEWED IN IOWA.

J. C. Dinwiddie, postmaster at Marango, Iowa, chanced to obtain two copies of the Thirtieth Anniversary issue of the MANUFACTURERS RECORD, "Thirty Years of Southern Upbuilding," and he writes an interesting account of the disposition of them. He says:

I found the work very interesting indeed, the contents revealing an industrial epoch for the grand old South that only those who have examined it can begin to realize. I placed one copy in our public library, where it has become an exceedingly popular reference book. The other copy I placed on a writing desk in the lobby of the postoffice of this place, with a string tied to it, but it proved too tempting, and was promptly "swiped" and carried away in less time than it takes me to tell you about it.

This is the first instance that has been brought to our attention of the "swiping" of a whole copy of our Thirtieth Anniversary issue. We took the usual precaution of tying a string to that in the shape of a copyright. But the string has been ineffective in some respects, for more than one of our admiring contemporaries who recognize a good thing when they see it have "swiped" portions of the issue appealing to them and have reproduced them as of their own work and without a line of credit to the source.

The MANUFACTURERS RECORD has, of course, not the slightest objection to the reproduction in other publications of material taken from its pages, provided the usual credit is given. It welcomes all such occasions for duplicating, re-duplicating and reinforcing the work it has been doing for Southern upbuilding in the past 30 years. But it regrets the spirit in others that has not the gen-

erosity to give credit where credit is due.

However, to return to Mr. Dinwiddie's letter. The interest aroused in the Iowa town by "Thirty Years of Southern Upbuilding" illustrates the far-reaching effect of that publication in turning the thought of the people of other sections to the South. Many millions of dollars and many thousands of people will go South as a result of that publication, and the number of dollars and of people will be increased in proportion as its circulation in the North and West is broadened.

A STREET CAR WITHOUT STEPS.

A stepless street car is the newest thing in vehicles for urban railways. The first of this particular brand was designed, according to reports from New York, by Frank Hedley, vice-president, and J. S. Doyle, mechanical engineer, of the New York Railways Co., and was built by the J. G. Brill Company of Philadelphia. It is described in such a way as to indicate that it is a boon to the aged and infirm, as well as to hobble-skirted women and wooden-legged men. It has two doors, one on each side in the middle, but none at the ends; neither are there any platforms. The ends of the car are rounded, with seats for passengers and a compartment for the motorman. Electricity, as usual, is the motive power. Although it is six feet shorter than the regulation car, the new vehicle seats 11 more people, owing to the nature of its construction.

Steps are made unnecessary by hanging the body of the car on the trucks in such a way as to place the floor only 10 inches above the ground at the center. The doors cannot be opened until the car has stopped, nor can it start until they are closed. The conductor operates them by pressing a button. He sits in a booth, and the pay-as-you-enter system prevails. A unique feature of the car responds to the weight of the passengers and operates ventilators so as to admit more or less air according to their numbers.

A preliminary test of this vehicle was witnessed by a number of street-railway officers of New York and other cities. It will be tried out thoroughly in regular service and may be adopted for general use. Evidently this type would result in the abolishment of the back platform smoker, although provision may be made for smokers by having the cars made in open patterns for summer use, with the usual reservations for lovers of the weed.

It is to be hoped that this or some other type of stepless street car will prove satisfactory, for a majority of riders would welcome it.

BRINGING RESULTS.

Harry Bros. & Co., Inc., of Newport, Ky., manufacturers of corrugated metal culverts, tanks, etc., writing under date of March 18 to the MANUFACTURERS RECORD, says:

Our ad. in this paper has already brought us some nice results, and we can trace probably one-half of our orders to the Daily Bulletin of the Manufacturers Record.

That is an illustration of what the MANUFACTURERS RECORD and the Daily Bulletin are doing for their advertisers and readers. In a somewhat similar strain Mr. R. W. Banks, Jr., sales manager of J. E. Hood & Co., Gulfport, Miss., under date of March 15, writes:

My inquiry to you, inserted in the Daily Bulletin, is certainly bringing results, as my mail box is packed and jammed with letters from all parts of the country, from all classes and kinds of people, which only goes to

prove that the MANUFACTURERS RECORD is widely read, and closely read, by the classes from all sections of the country. . . . If any of them can fill the order for the goods which I am asking, they will certainly get the contract.

OPEN-HEARTH RAIL SUPPLANTING BESSEMER, AND WHAT THIS MEANS TO SOUTH.

Two very interesting facts in regard to the steel-rail production of the United States last year are brought out in the annual report of the American Iron and Steel Association. One is the heavy decrease in the output of 1911 as compared with 1910, and the other is the very rapid increase in the output of open-hearth rails as compared with Bessemer rails.

In 1911 the total rail production of the country was 2,822,790 tons, as compared with 3,636,031 tons in 1910, a decrease of 813,241 tons, or over 22 per cent. This decline is all the more striking when compared with the output of 1906, which was 3,977,887 tons. With six years' growth added to the country, to the volume of travel and traffic, and to the rapid deterioration of rails, we made last year 1,155,000 tons of rails less than in 1906. Evidently the railroads of the United States are not replacing their worn rails to as great an extent as they were doing in 1906, nor even in 1910, for the decrease in new railroad mileage would hardly account for so large a decrease in the production and consumption of rails. The wear and tear on rails, which goes on steadily, must sooner or later be taken up by a very great increase in roadbed reconstruction and the putting down of new rails. The railroads of the country cannot go on wearing out their rails and their rolling stock without some day having to pay the full penalty. This situation is not wholly due to railroad managers, but is very largely due to the agitation against railroads, which has made it difficult and at many times impossible to secure the money badly needed for betterments as well as for the building of new lines. The very men who have been most vigorous in denunciation of railroads would not themselves invest a dollar in railroad enterprises under the conditions which have prevailed during the last few years, and yet they have been unceasing in the denunciation of railroads for not having extended their lines and bettered their roadbed, and at the same time reduced freight rates.

The rapidity with which the country is turning to open-hearth rails is shown in the fact that in 1908 the total production was 571,791 tons against 1,349,153 tons of Bessemer rails. At that time the Bessemer rail output exceeded by 777,361 tons the output of the open-hearth rails. In 1911 the production of open-hearth rails was 1,676,923 tons and that of Bessemer rails 1,138,633 tons, the open-hearth production exceeding the Bessemer output by 538,290 tons, this excess being almost exactly the same as the total production of open-hearth rails only four years before. The production of Bessemer rails in 1911 was 745,000 tons less than in 1910, while the decrease in open-hearth rails was only 74,436 tons.

These facts are of significant importance to the South. In former years when the Bessemer rail commanded the situation and open-hearth steel was not used except to a very limited extent, the North and West had a very great advantage over the South by reason of the fact that the Lake Superior ores were suitable for making Bessemer

steel while Southern ores were not. Thus the iron and steel development of the South was tremendously handicapped. Now, however, when the superiority of the open-hearth steel has brought about such a rapid increase in the output of open-hearth rails, resulting in a great decline in the output of Bessemer rails, this handicap is removed from the South, and that section has the opportunity for a development of its open-hearth or basic steel industry commensurate with its great iron ore supplies and its coking coal. This ought to bring about a very rapid development of the steel-making interests of the South.

MISSOURI PRODUCTS.

Of \$376,545,819 worth of products of Missouri in 1910, according to the latest issue of the Missouri Red Book, published by the State Bureau of Labor Statistics at Jefferson City, \$91,381,218 worth was consumed locally and \$285,164,601 worth was shipped away. The last named, designated as surplus products, include only such commodities as were shipped to market by the several railroad and express companies of the State, and that products consumed locally are merely stated approximately and do not include such as were hauled to the cities and towns of the State and there consumed. Of the surplus products values, \$105,225,879 represented livestock, \$35,918,494 packing-house products, \$34,982,224 mine and quarry products, \$30,766,257 poultry, eggs and feathers; \$22,219,790 farm crops, \$15,847,241 flour, cornmeal, bran and feed, \$11,777,542 logs, lumber, piling, railroad ties, fenceposts, telegraph poles, cooperage, cordwood, charcoal, excelsior, etc.; \$6,595,459 brick, cement, lime, sewer pipe and tiling, stoneware and plaster; \$4,576,813 seed cotton, lint, cottonseed and cottonseed products; \$3,270,052 fresh fruits, large and small; \$3,182,380 butter, milk and cream, butter-milk and cheese; \$2,059,950 wool and mohair, \$1,384,419 vegetables and canned goods, \$1,353,033 nursery stock and cut flowers, \$737,561 liquid products, \$456,188 Missouri meerschaum products, including corn-cob pipes, pipe stems, pipe cleaners, etc.; \$331,070 game, fish, furs, turtles, frogs, terrapin and crawfish; \$90,908 roots and herbs, ginseng, sunflower seed and bark, and \$4,334,726 unclassified products, including 266,689 tons of clam shells, 329 tons of crushed shells, 100,000 pounds of pearl buttons and blanks, linseed oil and meal, petroleum, coke, ice, junk, etc.

This exhibit of surplus products, which in detail reveals a wide diversification of activities in Missouri, is one of the most practical advertisements of the State's resources published annually, and the latest Red Book carries, in addition, condensed information about each of the 114 counties of the State and some suggestive articles on good roads and drainage and leveeing work.

FINANCING THE ALABAMA CONSOLIDATED AND THE SOUTHERN IRON & STEEL CO. MERGER.

Harvey Fisk & Sons, the New York bankers, who are syndicate managers for the underwriters of the proposed merger of the Alabama Consolidated Coal & Iron Co. and the Southern Iron & Steel Co., are now taking active hold of the placing of the underwriting and are inviting subscriptions for the portion not yet taken. Heretofore they have left the actual placing of the underwriting to others, and while large subscriptions have been received, this firm has not until within the last day or two aggressively undertaken to place the underwriting in addition to acting as syndicate managers.

Activity in Construction and Development Work.

A STORY IN FIGURES OF THREE MONTHS' REPORTS.

Since January 1 the MANUFACTURERS RECORD has published 15,339 items of manufacturing, designing, building, financial, railroad and general business developments of the South and Southwest. These more than 15,000 items concretely evidence the beginning of noticeable improvements in the industrial field and convey a vast deal of information to interested parties. They cover a wide and diversified number of developments, and show continued and increased activity along many lines.

Under leading industries the table immediately following presents the totals of these items for the months of January, February and March:

INDUSTRIAL AND DEVELOPMENTAL:	January.	February.	March.	Total for 3 months.
Bridges, Culverts, Viaducts.....	46	79	50	175
Canning and Packing Plants.....	33	53	41	127
Clayworking Plants.....	17	17	12	46
Coal Mines and Coke Ovens.....	27	43	34	104
Concrete and Cement Plants.....	7	14	7	28
Cotton Compresses and Gins.....	13	28	24	65
Cottonseed-oil Mills.....	8	5	12	25
Drainage and Irrigation.....	46	38	53	137
Electric Plants.....	85	110	86	281
Fertilizer Factories.....	11	19	5	35
Flour, Feed and Meal Mills.....	10	26	20	56
Foundry and Machine Plants.....	39	65	50	154
Gas and Oil Developments.....	47	55	45	147
Ice and Cold-storage Plants.....	61	81	48	190
Iron and Steel Plants.....	7	18	8	33
Land Developments.....	102	119	98	319
Lumber Manufacturing.....	78	104	86	268
Metal-working Plants.....	6	9	14	29
Mining.....	29	48	48	125
Miscellaneous Construction.....	38	48	27	113
Miscellaneous Enterprises.....	145	190	118	453
Miscellaneous Factories.....	223	285	191	699
Motors and Garages.....	39	58	29	126
Railway Shops, Terminals, Roundhouses, etc.,	19	26	18	63
Road and Street Work.....	143	210	201	554
Sewer Construction.....	49	78	71	198
Telephone Systems.....	33	41	34	108
Textile Mills.....	29	35	56	111
Water-power Developments.....	23	19	19	61
Water-works.....	79	114	110	303
Woodworking Plants.....	40	72	54	175
BUILDINGS:				
Apartment.....	58	105	130	293
Association and Fraternal.....	41	48	51	140
Bank and Office.....	115	147	119	381
Churches.....	73	140	106	319
City and County.....	52	58	65	175
Courthouses.....	15	25	27	67
Dwellings.....	248	464	416	1,128
Government and State.....	18	30	35	83
Hotels.....	57	105	90	252
Miscellaneous.....	100	100	87	287
Railway Stations.....	45	50	42	137
Schools.....	156	225	198	579
Stores.....	226	351	266	843
Theaters.....	31	49	38	118
Warehouses.....	53	78	84	215
RAILWAYS:				
Steam.....	191	283	218	692
Street.....	21	28	33	82
FINANCIAL:				
Corporations.....	197	235	169	601
New Securities.....	332	405	346	1,083
Burned, etc.....	338	283	163	784
Machinery, Proposals and Supplies Wanted....	538	636	508	1,772
Total.....	4437	5952	4950	15,339

The preceding table includes mention of hydro-electric plants of such magnitude as to be planned for development of many hundreds of thousands of horse-power, and involving ultimate expenditure, when all these projects are carried out, of more than a hundred million dollars; projects and plans for increased railroad facilities have been noted; statements given as to new and extended coal-mining operations; textile-mill activities have been shown; information supplied on formation of drainage districts, and reclamation of vast areas of valuable lands.

All these have revealed great opportunities to the capitalist, the engineer and contractor, the man who makes or sells machinery and equipment for the manufacturing or power plant, or who handles materials useful to the builder and manufacturer. And equally valuable have been, and are, the similar opportunities presented by the items on bridge construction; canning, packing and ice plants; cotton gins; oil, fertilizer and lumber mills; woodworking establishments; foundry and iron works; clay-working and concrete plants; wharf, dock and levee construction; automobile and motor-truck works; municipal, county and State construction of roads and streets, sewers, water-works and public buildings, together with the many structures of public and private ownership, such as offices, buildings, churches, dwellings, hotels, stores, warehouses, etc., which have been noted as contemplated, planned or contracted.

Usually the various stages of progress are described, since industrial or building operations are frequently mentioned two or more times as advancement of plans, bids, contracts, etc., are announced, all these statements revealing the splendid extent and variety of Southern industrial activities of the recent past, while they show the progressive spirit of the present and promise well for the immediate future.

The Machinery, Proposals and Supplies Wanted columns for the three months

have contained nearly 600 requests for data and prices on machinery and equipment, building materials, contracts, etc., quite a number of these requests coming from our foreign readers in the countries of Cuba, Porto Rico, Argentina, West Indies, Spain, Australia, France, Italy, England, Belgium, Holland, Russia, Turkey and Japan—a continued evidence of the fact that dwellers in foreign lands are greatly

interested in what is brought to their attention through the pages of the MANUFACTURERS RECORD.

Under State headings and by leading industries the second table presents a detailed statement of items published in March. Items for January and February were previously detailed. The second table follows:

INDUSTRIAL AND DEVELOPMENTAL.	ALA.	ARK.	D.C.	FLA.	GA.	KY.	LA.	MD.	MISS.	MO.	N.C.	OKLA.	S.C.	TENN.	TEX.	VA.	W.VA.	TOTAL
Bridges, Culverts, Viaducts.....	4	1	3	3	1	3	3	3	7	5	3	1	4	5	3	1	50	
Canning and Packing Plants.....	3	6	2	1	5	2	5	1	2	1	..	..	4	3	6	..	41
Clayworking Plants.....	2	1	..	3	2	..	..	..	..	..	..	..	2	1	1	..	12
Coal Mines and Coke Ovens.....	6	2	..	..	..	6	1	1	..	2	..	3	1	3	1	..	9
Concrete and Cement Plants.....	..	..	..	..	..	2	1	..	1	..	..	..	..	..	2	..	7
Cotton Compresses and Gins.....	2	4	..	..	3	1	..	..	..	..	1	2	1	2	8	..	24
Cottonseed-Oil Mills.....	1	1	..	1	..	..	..	3	..	..	1	1	1	1	3	..	12
Drainage and Irrigation.....	..	7	..	1	..	9	..	6	1	9	..	2	2	16	..	..	53
Electric Plants.....	3	4	..	4	14	9	3	2	1	6	8	7	6	2	11	5	1	
Fertilizer Factories.....	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3	..
Flour, Feed and Meal Mills.....	2	..	..	..	2	2	1	1	..	2	6	..	..	2	2	..	20
Foundry and Machine Plants.....	3	3	..	2	5	6	..	4	8	4	4	4	1	2	4	..	50	
Gas and Oil Developments.....	2	1	..	..	5	4	..	..	..	..	16	..	..	8	..	9	45
Ice and Cold-Storage Plants.....	2	1	..	5	1	6	5	2	3	1	6	..	1	3	5	7	..	
Iron and Steel Developments.....	5	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1
Land Developments.....	9	3	..	10	9	1	10	7	2	5	12	3	4	2	9	11	1	
Lumber Manufacturing.....	6	7	..	6	2	2	8	1	13	4	13	..	3	6	8	3	4	
Metal-Working Plants.....	..	..	..	..	2	1	..	2	..	3	2	2	..	..	..	..	2
Mining.....	2	1	..	1	3	3	1	..	2	13	1	5	1	5	6	2	2	
Miscellaneous Construction.....	2	..	..	6	2	..	2	..	4	1	..	..	..	2	4	4	..
Miscellaneous Enterprises.....	9	4	2	3	6	10	4	7	3	16	7	4	5	7	15	9	7	
Miscellaneous Factories.....	16	7	..	6	22	15	7	7	2	23	15	3	6	14	26	14	8	
Motors and Garages.....	1	..	1	..	5	..	1	3	..	2	2	..	3	2	3	1	5	
Railway Shops, Terminals, Roundhouses, etc.....	..	..	..	..	1	..	..	3	..	..	1	1	..	1	8	..	3
Road and Street Work.....	18	7	2	12	8	8	7	7	10	3	26	4	12	15	34	20	8	
Sewer Construction.....	2	3	..	4	5	1	3	5	3	6	2	3	6	4	14	6	4	
Telephone Systems.....	6	3	..	..	3	1	..	1	2	..	4	3	..	1	4	2	4
Textile Mills.....	2	1	..	..	5	..	..	3	..	2	28	..	5	4	3	3	..
Water-power Developments.....	3	..	..	1	5	..	..	2	..	..	4	..	..	2	1	..	1
Water-works.....	3	10	..	8	11	2	3	7	2	6	7	13	5	1	18	9	5	
Woodworking Plants.....	3	8	..	1	2	2	2	2	4	4	7	1	..	5	5	3	5	
BUILDINGS.																		
Apartments.....	8	1	3	5	11	4	2	5	2	52	2	..	1	6	11	13	4	
Association and Fraternal.....	1	3	1	2	4	6	5	3	1	3	5	1	1	4	7	1	3	
Bank and Office.....	12	2	4	10	8	3	4	6	..	14	3	6	7	10	23	3	4	
Churches.....	4	4	1	5	9	7	5	7	7	2	9	4	3	13	11	7	8	
City and County.....	7	2	1	6	5	4	3	1	2	4	6	1	3	5	12	3	..	
Courthouses.....	1	2	..	1	..	2	1	1	2	4	3	1	1	..	6	..	2	
Dwellings.....	18	6	39	11	47	10	12	65	2	62	28	5	16	30	22	40	3	
Government and State.....	..	2	..	3	1	5	2	..	1	2	1	2	5	2	7	2	..	
Hotels.....	6	5	2	12	10	3	3	3	4	11	9	..	2	9	6	4	1	
Miscellaneous.....	5	3	..	5	3	5	3	2	..	9	10	3	7	6	9	11	6	
Railway Stations.....	1	..	..	2	7	1	..	3	1	2	6	1	1	3	13	..	1
Schools.....	11	3	3	7	13	6	15	4	8	14	12	5	8	10	54	9	16	
Stores.....	16	7	12	13	26	6	5	9	3	28	16	4	11	16	60	21	13	
Theaters.....	4	4	1	3	1	4	4	2	..	1	3	1	1	1	2	2	4	
Warehouses.....	3	1	3	5	10	12	3	8	1	3	7	..	2	5	14	7	..	
RAILWAYS.																		
Steam.....	15	11	..	4	20	10	10	4	5	7	20	13	4	15	61	9	10	
Street.....	3	3	1	2	2	..	2	..	2	2	5	1	2	1	6	1	..	
FINANCIAL.																		
Corporations.....	6	4	1	6	18	2	9	5	5	6	16	18	6	12	44	9	2	
New Securities.....	13	8	..	11	26	13	13	8	17	31	31	18	15	21	80	20	21	
<hr/>																		
Burned, etc.....	248	159	78	192	344	192	177	211	136	371	363	162	162	268	675	273	178	
Machinery, Proposals and Supplies Wanted.....																		163
<hr/>																		
Total for March.....																		4958

LAND RECLAMATION.

Details of Drainage and Other Projects in the South.

T. S. Kyle, manager and treasurer the Kyle Lumber Co., Gadsden, Ala., writing to the MANUFACTURERS RECORD relative to present status of the company's marsh land reclamation near Ocala, Fla., says:

"We beg to say our enterprise consists of a 5000-acre tract of muck land through which the Oklawaha River flowed. These lands were subject to overflow from the river during wet seasons; in fact, were covered with water on average of 18 inches approximately four years out of a seven-year period. This particular tract of muck land was known as Heather Island Prairie, being covered with a heavy growth of maiden cane and wild millet, and no trees, and the general appearance was much like a Western prairie. The analysis of the soil, which is practically uniform over the entire area, runs approximately 88 per cent. humus, 3 per cent. ammonia, ½ per cent. phosphoric acid, ½ per cent. potash. It also carries lime, due to presence of shells in quantity. The Oklawaha River, an extremely tortuous stream, flowed through our lands a distance of 13 miles. In order to drain the lands it became necessary to divert the river; hence a canal approximately 30 feet wide and 8 feet deep and five miles long was cut

through the higher lands surrounding the marsh, thus shortening the river by eight miles and entirely diverting the water from the marsh. A levee was made with the dirt excavated from the canal, which protects the land from overflow during the highest waters. Owing to the land being so nearly level (having one foot fall to one mile), and of such wide expanse, it was necessary to cut lateral ditches 110 yards apart and parallel, leading into the old river bed. These ditches, so far as cut, have perfected the drainage. Laterals have been cut through 2000 acres, and farming is being carried on. A variety of crops have been planted, and so far is showing marvelous growth. The work of cutting laterals is being pushed, and we estimate our entire tract will be ready for cultivation within 12 months' time. The first year's planting will mainly consist of grain, such as corn, oats and rice, together with small acreage of Bermuda onions, Irish potatoes and other vegetables. It is our purpose after first year's cultivation to direct our attention particularly to vegetables, our lands being peculiarly adapted to the growth of potatoes, onions and celery.

"The work of drainage began in January, 1910, and the canal was completed in March, 1911. Last year an experimental crop of corn planted on May 20

yielded 125 bushels per acre without fertilization."

Geo. W. Seitz, secretary St. Francis drainage district, Piggott, Ark., writes to the MANUFACTURERS RECORD:

"This has been a drainage district for about six or seven years, and was commenced under a special act of the Legislature of Arkansas, which has been amended many times since; in fact, every two years, or as often as the Legislature meets. The purpose of the act is to cut a large canal through Clay and Greer counties, Arkansas, parallel with the Cotton Belt Railroad a distance of about 40 miles, and to levee the St. Francis River from the town of St. Francis, Ark., where the Cotton Belt Railroad crosses the St. Francis River to the mouth of the ditch, which would make the levee about 55 miles long. It was at first thought that \$250,000 would do the work, but the board has already expended over \$300,000, and on the 22d day of March it sold \$165,000 more bonds, which we think will complete the work—the main work, I mean. When the main ditch and levee is complete, which will cost about \$500,000, then there will be spent as much probably for laterals and small ditches to drain into the main drains; in fact, they are cutting the laterals now. A great many of them, at least. It will drain about 150,000 acres of the richest land in

the St. Francis basin when completed. It is in Clay and Greene counties, Arkansas, in the northeast corner of the State, with Missouri on two sides of it. J. D. Mitchell of Rector, Ark., is the engineer in charge, and A. V. Wills & Sons of Paragould, Ark., are the contractors."

Camden, Ark.

Mayor A. L. Morgan of Camden, Ark., writes to the MANUFACTURERS RECORD:

"Our city is offering exceptional facilities to parties wishing to locate manufacturing plants, etc., in the South. We have three trunk line railroads, the Missouri Pacific, the Cotton Belt and the Rock Island, and we are at the head of navigation on the Ouachita River. The Government is just completing a system of locks and dams which will give us all-year slack-water navigation and direct communication with the outside world by water, insuring us cheap freight rates. We have cheap fuel, etc., that should attract."

The Texas & Pacific Quarterly, published by the general passenger department of the railway company, is devoted to a detailed and interesting presentation of the opportunities in the several parishes of Louisiana and to general articles bearing upon the material development of that State.

Richmond's Strategic Position Utilized by Men of Richmond.

[Special Correspondence Manufacturers Record.]

Richmond, Va., March 23.

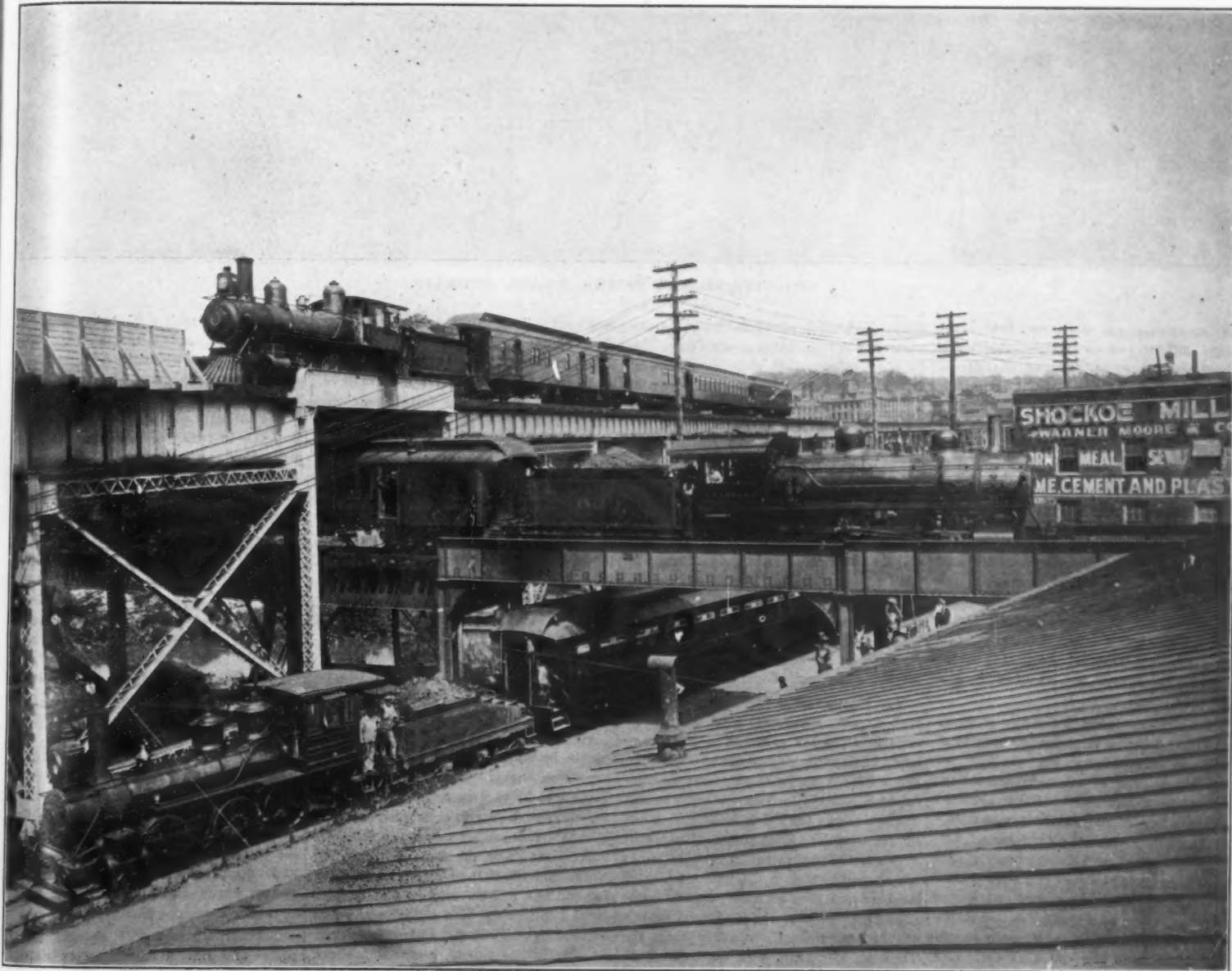
Richmond, lying on the James, where, as one of her eloquent sons has aptly put it, "the falls of the river meet the tides of the sea," has since early colonial times held a prominent part in the social, political and military affairs of the country, great men and great events making her in every epoch of its development the scene of im-

fiercest and most destructive war of modern times, only to be left finally, when the conflict was over, with its business district and portions of its residence section laid in ashes as the result of arsenals and military stores being fired by the retreating army, lest they be utilized by the city's captors.

When the Southern army disbanded in

field of battle bore them and those who came after them through a thousand discouragements and disappointments in the task they had set themselves to do in rescuing the city from the red ruin war had wrought, and making her, as she is today, one of the fairest, most prosperous and most progressive of the nation's municipalities.

communities who were looking for opportunities to cast their lot among people of energy and activity, and lately considerable outside money has come here for investment, giving added impulse to what was being accomplished by her own sons. With this new money and the new blood that accompanied it, and with the courage of her own people strengthened by each



THE CROSSING OF THREE TRUNK LINES AT RICHMOND.

portant activities, endowing her with a fame as enduring as the history of the republic.

Richmond was founded in 1733 by Col. William Byrd, who in 1737 began to advertise in the *Virginia Gazette* its advantages as a place of residence and investment. In 1756 his son, in order to hasten the sale of town lots, established the Byrd Lottery, long well known throughout the country and frequently referred to in deeds executed in the present day. In 1742 the General Assembly of Virginia established the town of Richmond, and in 1779 the seat of government was moved from Williamsburg and Richmond became the capital of Virginia. It was made the capital of the Southern Confederacy in 1861, and was for four years the storm center of the

1865 the men of Richmond returned to the city to find it in ruins—houses destroyed, property laid waste, business swept out of existence. They were too courageous to despair, too proud to cry aloud in their distress, and so, silently, grimly, and with high resolve, they set to work to lift the city from the ashes of her desolation and re-establish her in the high position that had once been hers. But instead of trying to win back her prestige in politics and war the energies and abilities of the men of Richmond were impelled by circumstances to seek other modes of expression, and they gave their efforts to winning for her a place of eminence in the commercial and industrial affairs of the country. The same unflinching courage, the same stern determination that sustained them on the

So quietly has this work been done, and so accustomed are people generally to regard Richmond as merely a social and political center, that few outside her own citizens have taken the measure of her accomplishment, and not many even of those who know fully appreciate its significance. Yet so effective has it been that in point of diversity of manufacturing interests, no less than in the aggregate value of product, Richmond is surpassed by few cities of the same size in the country, while in the matter of compact city building and modern municipal improvements it has few equals among cities of any size.

The spirit of aggressive enterprise exhibited by these men of Richmond attracted the attention of those from other

victory won, their ambition rising higher with each obstacle overcome, Richmond looks buoyantly out upon a future that broadens as the perspective lengthens, and is bounded by no perceptible lines of limitation.

Furnishing a broad basis for the activities of her people, though of itself inoperative without them, is Richmond's position of natural strength with respect to the three fundamental elements necessary to successful manufacturing—raw materials, power and transportation. The Richmond men of the early days appreciated the importance of this position—doubtless, indeed, it was a controlling factor in the founding of the city—and before the era of steam in turning wheels and driving spindles, long before its utili-



BIRD'S-EYE VIEW OF CAPITOL SQUARE, RICHMOND.

zation upon ocean roads and steel highways, advantage was taken of the power developed from the falls of the James River, and of the deep current below the falls that bore the commerce of the city to and from the open sea, thus furnishing power for production and the facilities for assembling the raw materials and for carrying to market the finished product. Cotton mills flourished here in the early days, great flouring mills, with burrs and bolts driven by the strength of the harnessed waters, sent thousands of barrels of their product yearly into the markets of the world; iron mills and woodworking plants, each with its own individual race and its own great water-wheel, made further use of the motive potentiality which a generous nature had so liberally provided.

Since the dawning of the day of steam and the relegation of water for power and transportation from its position of primacy to that of an added advantage, other cities have secured by artificial means many of the advantages that formerly were Richmond's by force of natural endowment, and her enterprising sons have been called to meet a keener competition. But this, it seems, has only served to arouse them to a greater degree of determination, to the display of more energy and activity, to the end that their city might be placed on an equal plane of acquired facilities and still enjoy the added advantages of its natural endowment. Bending their endeavor to this object, the men of Richmond have caused their city to be made the meeting point of five great trunk railway lines, reaching north and south and west, and east to the nearby seaboard, and there is now no section of the country, no market of the world, which Richmond products cannot reach with a facility and a cheapness that will average with those enjoyed by any other city. With respect to some, and especially to the rapidly-growing South, whose people in proportion to production at home are larger consumers of manufactured articles than those of any other section, Richmond occupies a position of advantage not surpassed by that of any recognized rival.

In the matter of raw materials of many

kinds, Richmond possesses many advantages in the economical assembling. The fields of tobacco that grow near and all around; the forests of waving pine and sturdy oak and towering poplar—and all the various kinds of woods that grow between the Ohio River and the Atlantic Ocean—the mines of coal that enrich the hills of Virginia and West Virginia; the iron beds that lie thinly covered by the soil of either State; the cotton fields of the northern portion of North Carolina and the southern end of the Old Dominion—all these pour their wealth of material naturally, easily and cheaply into the lap of Richmond, here by the application of brain and power and handicraft to be wrought into myriad finished forms for the use and enjoyment of mankind.

The plants, large and small, occupied with turning these and other raw materials into finished products in 1910 numbered 1782, employing laborers to the number of 32,690, and with an aggregate capital of \$35,073,510. The combined output of these plants totaled in 1910 (the latest figures available) \$90,281,408. Prominent among these manufacturing establishments are those engaged in the manufacture of smoking and plug tobaccos, cigars, cigarettes and cheroots; the Richmond branch of the American Locomotive Co.; the Tredegar Company, with its great foundry and machine shops; the Old Dominion Iron and Nail Works; the Richmond Cedar Works, the three big paper mills, the Southern Manufacturing Co., making baking powder; the flouring mills, the numerous large plants of the Virginia-Carolina Chemical Co., manufacturing fertilizers, and the plant of the Richmond Guano Co. The following list comprises the Richmond establishments engaged in actual manufacturing, or in such adding of value to natural products as counts equally with manufacturing:

Automobiles, bicycles, lock and gunsmiths, bakers, confectioners, chewing-gum makers, beer bottling, liquors, mineral waters, ice, blacksmithing, wheelwrighting, boot and shoe manufacturing and repairing, boxes, barrels, paper, twine, bags, brick, granite, tile, marble, stone, carpentering, contracting, builders, plasterers, carriages, wagons, carts, clothing, men's

merchant tailors, shirts, women's clothing, dressmaking, millinery, pickles, vinegar, dairy products, dyeing and cleaning, drugs, medicine, perfumery, electrical appliances, typewriters, wiremakers, fertilizers, chemicals, cement, lime, grease, tallow, roofing, florists, flour, cornmeal, baking powders, flavoring extracts, blueing, foundry, machine shops, agricultural implements, furniture, mattresses, upholstery, picture frames, awnings, cabinet-makers, jewelry, hair work, photography, lumber, sash, doors, blinds, butchers, curers and packers of meats, paints, varnish, paperhanging, mica, plumbing, gas and steam fitting, tin-smith, coppersmith, sheet iron, printing and publishing, bookmaking, lithography, engraving, saddlery, harness, leather, tobacco, cigars, cigarettes, cheroots, willow-ware, woodenware, trunks, brushes, brooms.

First in importance in manufacturing plants, by reason of total value of output, are those engaged in manufacturing tobacco into its various marketable forms—smoking, plug, cigars, cigarettes, cheroots, in which the product aggregates \$21,350,925. Next come the foundries and iron works and the nest of plants turning out locomotives, boilers, engines and agricultural implements, with a total product of \$10,525,150. These are followed, in turn, by fertilizers, paper, boots and shoes, butchers and packers of meats, manufacturers of lumber, and so on down the list to the small concerns employing but few hands and turning out products of small relative value, but each lending its help to build up an imposing aggregate. The advantage gained from this wide diversity of manufacturing interests is that it saves the city from those periods of depression that inevitably come to the community that is dominated by a single industry, and which is prosperous or otherwise according as that particular industry is active or stagnant.

In some branches of manufacture Richmond occupies a distinctive position. For example, in the making of blotting paper. Three mills are thus employed—the Standard, the Richmond and the Albemarle—and their combined output is 65 per cent. of the total amount manufactured in the United States. The largest of the mills,

the Standard, makes 25 tons daily. A curious thing about the blotting-paper business is that while the public regards blotting paper as about the cheapest of commodities, because it is practically all given to the ultimate consumer without cost to him, it is in reality a very expensive product, owing to the fact that it is made so largely of rags. News, book, wrapping and various other kinds of paper are made of wood, straw and other comparatively cheap substances; but blotting paper, which everybody who buys it buys to give away, must be made of rags, and rags are expensive.

Possibly no other of its industries better illustrates the spirit that has brought Richmond to its present position of eminence. There was no reason why Richmond should be the site of successful blotting-paper mills that would not govern in any other place with plenty of water, with cheap power and good transportation facilities, and there are some such in the country that would seem to have promised better for the business than Richmond. But the men of Richmond determined to enter the business, and combining brains, money and enterprise with their advantages of water, power and transportation facilities, they have compelled success.

Another distinctive Richmond enterprise—and this belonging solely to this city—is the Valentine Meat Juice factory. The history of the rise and expansion of this business is interesting. In 1870 Mrs. Mann Valentine, wife of a well-known citizen of Richmond, was ill, and it seemed impossible to get hold of a food that she could digest and assimilate. The various beef preparations were tried without success, and her husband saw her growing continually weaker for lack of nourishment. Finally he took to experimenting with beef extract, and was at last so fortunate as to hit upon a manner of preparing it that furnished exactly what Mrs. Valentine needed. It built up her strength so successfully that the physicians who were acquainted with her case asked Mr. Valentine to prepare the extract for other of their patients. Later they prevailed on him to place it on sale in the local drug stores, and before long the demand for it became such that a plant was established



VIADUCT AT RICHMOND.

and the preparation began to be manufactured as a business. Today the business, conducted by the sons of the inventor, is one of the important industrial branches of the city's life. The factory and offices occupy a large building in a prominent location, an abattoir and cattle pens cover 40 acres just outside the city, where 25,000 pounds of beef is slaughtered daily, and the output is sold throughout the entire civilized world.

Among the world-known patrons of this Richmond product have been numbered the late Emperor Frederick—the beloved "Unser Fritz" of the German army—father of the present Kaiser; the Czar of Russia, Li Hung Chang, the Chinese statesman and diplomat, while it is a popular article in the household of the Empress of Japan, though whether for her own use or that of others is not known. Lady MacDonald, wife of the British diplomat who was minister at Peking during the Boxer uprising, mentions it in an interesting article on what took place in the space to which the foreign legations were confined while the allied armies were besieging the city. Among other things, she relates that there was a bell tower upon which it was the custom for those who desired anything which others might have to post notices of what they wished. One of these notices she quotes offered anything in the storehouse of its author for a bottle of Valentine's Meat Juice. The meat juice was used extensively during the Boer War, and has been held in high esteem by those filling the camp chests in other and more recent wars. The world-wide success achieved by this product illustrates both what can be accomplished from the smallest beginning and what the sons of Richmond have been doing to bring fame and success to their city in the commercial and industrial world.

Another unique and remarkable manufacturing plant in Richmond is that which makes the well-known "Pin Money Pickles," than which there is no more widely known or popular brand on the market. The history of this successful plant also is interesting. Mrs. J. B. Kidd, whose husband was a well-known business man in Richmond some years ago, in an

outbuilding on her residence lot began making and selling pickles simply to furnish herself in "pin money." They became popular, and soon she had demands for more than she could furnish with her facilities for handling them. So she enlarged her plant, and kept on enlarging it as her trade kept on growing. Today she is at the head of an enormous pickle factory that turns out many thousands of dollars' worth of goods annually, and the product of which is sold all over the world. Mrs. Kidd has lately built one of the largest and most attractive apartment-houses in the city, which is operated under her supervision.

As mentioned above, Richmond flouring mills years ago enjoyed a widespread reputation for the excellence of their output, and sent many thousands of barrels of flour annually into the markets of this and other countries. The civil war and fiscal policies in South America destroyed this business, and it is only recently that it has been revived and brought back to anything like its former importance. Now, however, the mills are grinding more wheat and making more flour than ever before, and their markets have become almost world-wide.

One of the biggest of Richmond's distinctive manufacturing plants is that of the Richmond Cedar Works. This is the largest concern of the kind in the world, and its product is sold in practically every civilized country. It manufactures scores of articles of daily use in the domestic economy of the household, such as buckets, ice-cream freezers, trays, in fact about all the various utensils known to housekeeping which are made of wood. The plant is a very large one, occupying several acres of ground, and is supplemented by a big sawmill farther south, where the timber is cut in the swamps. Possibly no other manufacturing concern in the city is more widely known than this, or sends its product into a wider range of markets.

But large as her manufacturing industries are, and varied as they are, Richmond still presents unsurpassed opportunities for the establishment of many more successful plants. The value of water-power in the economical production of various articles of manufacture is coming

to be more and more realized as competition becomes sharper and the uncertainty of fuel prices is more and more emphasized by disturbances in labor conditions and the ever-shifting urgency of demand, and the possibilities of the James River in this respect are many times as great as the present development. Beginning within the corporation limits of this city and extending up the river for 30 miles is a succession of falls aggregating 160 feet, and it is merely a matter of the multiplication of dams to make the current of that historic stream furnish many thousands of horse-power more than is now being utilized. Within the city limits are four or five dams, diverting portions of the water to races on either side, thus furnishing direct power for various operations. The city owns some of this power development, a portion of which it uses in running the pumps of its water plant, while another portion is used in generating electricity for municipal lighting purposes. The Virginia Railway & Power Co. is the owner of a large share of these developments, and furnishes to many customers either water-power converted into electricity or the current from its races that will develop power. It is the policy of this company to furnish ample power for such manufacturing plants as may wish to locate in Richmond, and with the increase in demand it will either further develop its water-power holdings to make use of the potentiality now running to waste, or will add to the capacity of the steam plant which it is already operating in the city. No applying industrial establishment will be left powerless, so to speak.

With this great advantage of cheap power, with its ample railroad and waterway facilities, with its nearness to raw material supplies, with the constantly-increasing growth of the South, and its constantly-increasing demand for more manufactured articles, and with the unconquerable determination of her business men and capitalists to achieve primacy in commercial and industrial matters, it seems to me that Richmond has just begun to grow, and that what has been done, much as it seems, is not so much an illustration of actual achievement as it is an

earnest of what can be achieved and what the future will witness.

While there are inviting opportunities here for the establishment of new manufacturing plants of many kinds, it is felt that the opening is especially good for concerns engaged in making buggies, carriages, wagons, automobiles, pianos, furniture, paper, soap and brooms. Many others could be added to that list, but these are regarded as probably most in demand just at present.

Next to her manufacturing industries, Richmond's wholesale interests probably occupy the most important place with respect to the general public. These employ a total capital of \$13,225,237, and the sales in 1910 aggregated \$71,490,718. The greater portion of this business is done in the following lines:

Groceries, confectioneries, liquors, tobacco, cigars, cigarettes, provisions, boots and shoes, dry goods and notions, coal, wood, hay, seeds, nursery stock, drugs, licorice, flavoring extracts, hardware, agricultural implements, railway, mill and plumbing supplies, hats, caps, clothing, millinery, straw goods, sewing machines, typewriters, electrical supplies, bicycles, automobiles, rubber and sporting goods, oils, paints, varnish, glass, leather, hides, saddlery, tanbark, stoves, tin, china, earthenware, books, stationery, paper, furniture, carpets, upholstery, pianos, organs and other musical instruments and musical goods.

This great trade is secured chiefly from the South, and is due to the liberal policy which Richmond merchants deal with their patrons, and the energy and activity of the army of travelers who carry the flag of Richmond commerce, no less than to the excellent means enjoyed for reaching the business centers of that territory. It is the result of a fine combination of personal enterprise and transportation facilities.

A number of matters now in course of consummation will, it is thought, add materially to the opportunities for doing business profitably in Richmond. Among these is a railroad now being built from a connection with this city into the five wealthy, populous and productive Virginia counties forming what is known as the "North-



LATE RESIDENTIAL ARCHITECTURE AT RICHMOND.

ern Neck." This will bring within three hours' ride of Richmond 70,000 people who have heretofore done their chief trading elsewhere, owing to the fact that communication was easier than with this city. It is believed that the new road will turn a considerable portion, possibly half, of that trade to this city. There are 700 country stores and 10,000 farms in the territory thus sought to be bound to Richmond, and it is thought trade amounting to \$2,500,000 will be secured to the city by building the road. The people of Richmond recently subscribed \$75,000 to aid in its construction, and it

is expected that it will be completed within three years. In addition to the present trade of the "Northern Neck," the construction of a railroad into that section will doubtless cause a rapid growth, so that the returns will be even larger than anticipated.

Negotiations that have been in progress for some time in looking to building a traction line from this city to Urbanna, a point 30 miles distant, on the Rappahannock River, are reported to be nearly completed, and it is felt that the road will unquestionably be built. The section through which it will pass has been sadly in need

of facilities for reaching this city, and the proposed traction line will do much to develop the country and increase its trade with Richmond.

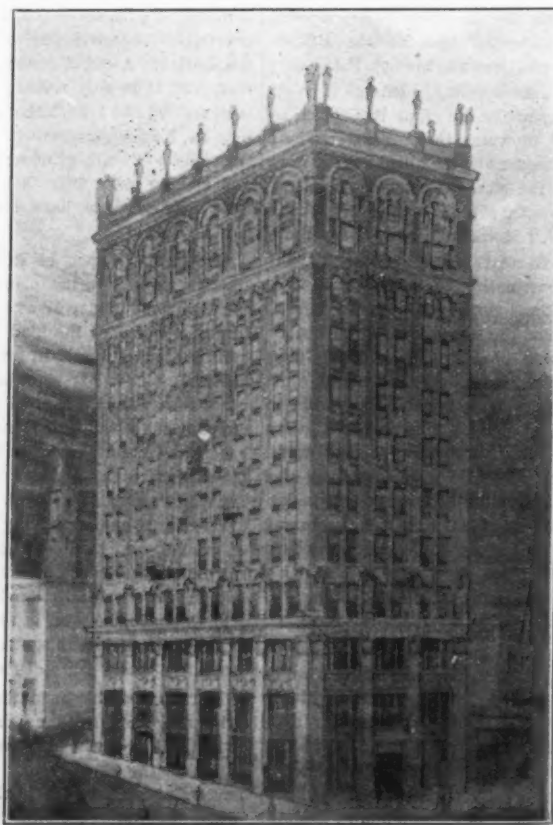
Richmond, by the way, having been the first city to successfully operate a trolley car, has much faith in it as a developer of outlying territory and a builder of trade, and believes that the most potential factor in city growth is a good system of suburban and interurban railways. It is claimed by people here who know, that no city in the country of like size has a better system or more of such railways than Richmond. Seven suburban and interurban electric lines enter Richmond, and the effect they have exerted and still exert upon its progress and prosperity cannot be estimated. One of these is a splen-

did line between this city and Petersburg, a distance of something more than 20 miles. It gives service almost beyond criticism, and is not only an effective helper of both cities, but is rapidly building up the intervening country.

Inside the city of Richmond the street-car service is of such high order that the people universally take pride and pleasure in calling the attention of visitors and strangers to it, and most of them are ready to assert that it is not surpassed by that rendered in any city anywhere. The relations of the company owning the electric lines—the Virginia Railway & Power Co.—and the city are cordial, and each is ready to help the other, realizing that in doing so it takes an effective way of helping itself. The city receives 3½ per cent.



FIRST NATIONAL BANK, RICHMOND.



VIRGINIA RAILWAY & POWER CO.'S OFFICE BUILDING.

of the company's earnings, while the patrons of its lines get six tickets for a quarter, with universal transfers, and school children and working people get tickets, good between certain hours, for 2½ cents apiece.

The city is now constructing a public wharf on James River, to be operated by the municipality, and before this article reaches the type will be the owner and operator of the Richmond Dock, long owned by a private company. This will insure adequate terminal facilities for all water-borne commerce at reasonable cost. This action is taken also to meet the requirements of Congress, recently promulgated, that Government appropriations for interior waterway development will only be made where adequate terminal facilities are publicly owned and operated, so as to insure shippers against private control. Other matters under consideration with respect to increasing the facilities for shipment of freight by water will doubtless be properly worked out within a short time, and the result will be, it is hoped, a largely-increased impetus in general business.

Other plans in contemplation and in progress of consummation will serve to help this impetus. Some of these look rather to properly caring for such increase in business as may come than to helping bring it. One of these is a new bridge across the James between Richmond and what was formerly Manchester, but is now South Richmond, and a part of the greater municipality. The new viaduct is being erected on the site of old Mayo's bridge, an ancient structure that was operated for many years as a toll bridge, but was finally purchased by the city and has been torn down to make way for the new structure. This will be a reinforced concrete structure, 60 feet in width, and will cost \$250,000. Another bridge will be constructed shortly between these two sections of the city, the demands of traffic being so great that they cannot be adequately met by one crossing. Plans and bids have already been asked for the construction of this second bridge.

The city owns the water-works and gas plant, and has also an electric-light and power plant of its own. In fact, it has two distinct water plants, each capable of working independent of the other, and each with capacity to pump more water than the city needs. Such an arrangement avoids any possible danger of interference in supply, such as is frequently occasioned in cities having but a single plant by the breaking down of some part of its machinery. The pumps and machinery of both these plants are operated by water-power from the river.

The municipal government of the city is honest and progressive, and has the confidence of the people to a high degree. The officials are thoroughly awake to the possibilities of the city, and are swift to take advantage of any opportunity that offers for helping it in its progress. The growth of the city from 1900 to 1910 was 50 per cent., and it now has a population of 127,668. Its area is but 11 square miles, and it is therefore the most densely populated city of its size in the United States, with the single exception of Paterson, N. J. It has close by suburban population of 40,000.

Just now there is great activity in building, and the record for 1911, which is the highest ever made by the city, stands in danger of being eclipsed. In that year the buildings constructed aggregated a cost of \$6,000,000, an increase of 50 per cent. over the year before, when they totaled \$4,000,000. The most impressive building now under way is that of the First National Bank. This structure will be 19 stories above ground, the tallest building



MUTUAL BUILDING AT RICHMOND.

south of New York and east of the Mississippi. It is being constructed of materials both substantial and ornamental, and will be one of the handsomest buildings to be seen anywhere. Other large and handsome structures are under way in various

parts of the city, while still others have but recently been completed, and many more are to be begun with the opening of spring. Altogether the business sections of the city present the appearance of a thoroughly modern municipality, and one



TRAVELERS' INSURANCE BUILDING AT RICHMOND.

substantially built as well. Many street improvements are in progress also, and the stranger visiting Richmond for the first time is much impressed by the activity in evidence on every hand.

The Chamber of Commerce of Richmond, well officered and well directed, is one of the most aggressive bodies of the kind to be found in the entire south, and is a potential factor in advancing the material interests of the community. Its members are active and devoted, and give much of their time to carrying out the objects of the organization. Just now the body is about to build a new home in which will also be established a Manufacturers' Exhibit. There will be gathered together in this building articles of every kind manufactured in the city, so that the visitor can see within the limits of a comparatively short visit just what is being accomplished in the various lines of manufacture. The exhibit will be permanent.

A popular feature of Richmond is its excellent hotels, of which it has a larger number, perhaps, than any other place of its size. Be that as it may, it has many, and is famed throughout the country as an excellent point for conventions and other large gatherings. The history of the Jefferson, largest of these caravanseries, is well known. It was built by Major Ginter, one of the city's tobacco millionaires, and not long after his death was destroyed by fire, whereupon other moneyed men of Richmond rebuilt and refurbished it, as a matter of city pride rather than anything else, for it had not formerly proved a paying proposition. It is believed now, however, that it either is or will become self-sustaining, if not able actually to pay a fair rate of interest on its cost.

Murphy's Hotel is an institution. It is said here that if you want to see anybody of whose whereabouts you are ignorant all you have to do is wait at Murphy's. The hotel is the property of Col. John Murphy, and its history is worth knowing. Colonel Murphy formerly kept on the corner where the hotel now stands, a small restaurant established a few years after the war, which became popular as a place in which to get good oysters. He did a good business and finally built a 32-room hotel, to which he added from time to time as trade demanded. Finally he put up an entirely new building across the street, joining it to his older one by a bridge spanning 8th street, and he now owns and operates one of the largest hotel properties in Richmond. In a few weeks the older building will be torn down, to be replaced by a much larger one, which will still further increase his capacity for taking care of the traveling public. Colonel Murphy is now a very wealthy man, and one of Richmond's most prominent citizens. He made his money in Richmond by having the foresight to recognize its many opportunities and the courage to take advantage of them.

Another hotel history may not be out of place, as it also serves to show what Richmond people can do and have done. Mrs. A. D. Atkinson, a Richmond woman, a number of years ago began conducting a hotel in a very small building far down town. Afterwards she leased the Lexington Hotel, a better site, and ran it for some time. Having made money, she secured a beautiful location just northwest of Capitol square, and there built the Richmond Hotel, a large and beautiful house. Her business increased here also, and she has just now completed an addition that doubles the capacity of the Richmond, and is the owner and operator of one of the largest, handsomest and best appointed hotels in the entire South. The opportunity was here and she had the

brains to realize it and the nerve to grasp it.

The great banking capital of Richmond is one of the sources of its immense commercial and industrial strength. The banks have money, and the bankers are not afraid to let it go for any substantial business, and therefore many large enterprises are financed by home money instead of having to go abroad for capital. A leading business man said to me a day or two ago that, whereas any proposition calling for \$50,000 or more would a few years ago have been compelled to go elsewhere for financing, similar propositions calling for hundreds of thousands could now be financed in Richmond without outside help. This is, of course, a tremendous asset, for it is easier to demonstrate a local proposition to a local man than to a stranger, and when home money stands behind home enterprises those enterprises have the moral as well as the financial support of the owners of the money. The banks of Richmond are able now to make the following excellent showing:

Banking capital and surplus, 1911..	\$13,678,200
Bank deposits.....	45,858,400
Bank loans.....	42,919,500
Bank clearings (Richmond exclusively).....	392,574,301

The bold, active men of Richmond have not been satisfied to build up their own city merely, but have been leaders in many enterprises throughout other sections of the South, helping to construct railroads, establish manufacturing industries and build cities. They have felt that their city should be the business capital of the country to the south of it, as it was formerly its political capital, and have devoted much of their time and energy and invested much of their money to make it such. Having been successful in accumulating large private fortunes—for there are many millionaires in Richmond—they feel like using them in developing the wonderland of riches known as the South, to the end that opportunities for amassing fortunes may be opened up to the thousands of Southern people.

With a generalship equal to that with which Lee and Jackson and Stuart led the armed legions of the South upon so many fields of glory and of carnage, the new generals of the Virginia capital are marshalling the industrial hosts of that same South upon new fields of endeavor, where the same patient courage displayed at the behest of the commanders of that other day will win bloodless victories of greater moment. It is a great mission to which these gallant Virginia gentlemen have called themselves, and its success means making the South what nature intended it should be, the garden spot of this continent—rich beyond human computation, lovely beyond compare.

GEO. BYRNE.

That Pennsylvania Ore Find.

The newspapers of the week of March 17 contained the announcement of the discovery of a billion tons of iron ore in Fulton county, Pennsylvania, specifying red, brown and carbonate ores, ranging from 57 to 63 per cent. of iron, and found in Dickey's Mountain, Lowrie's Knob and the Meadow Ground. To ascertain what might have given rise to the reports, Director Smith of the United States Geological Survey sent Geologist George H. Ashley into Fulton county to make an investigation. He reports that undoubtedly these hills contain several million tons of low-grade red iron ore, and may contain a small amount of high-grade brown ore and more low-grade brown ore.

Mr. Ashley found that three drill holes have been sunk into a shallow, canoe-shaped basin of red shale forming the "Meadow Ground." The basin is readily measured in length, breadth and depth. If

all ore, it would hardly contain 30,000,000 tons. The rocks are well exposed, and show practically no iron except the iron coloring the rocks. Lowrie's Knob, if a solid hill of ore, would contain only about 100,000,000 tons. The rocks here are likewise well exposed. A pocket of brown ore has been worked out on the east side by the old Hanover furnace yielding about 75,000 tons of ore (46 per cent. iron). The "cove" fault runs through Lowrie's Knob and Dickey's Mountain, so that the rocks forming them stand on edge and locally are crumpled. Dickey's Mountain contains some low-grade sandy iron ore on the west side, possibly 5,000,000 tons, as the bed cuts off against the fault. A little brown ore, 14 inches by 2 feet thick (38 per cent. iron), was dug for the Hanover furnace, but abandoned as impossible. The black shales of the Devonian are present in the region, but no suggestion of carbonate ore was seen.

POTASH IN MOHAVE DESERT.

Ancient Lake Bed Shown to Contain Millions of Tons of Salts.

A large deposit of potash salts in the Mohave Desert of Southern California has been reported by field men of the United States Geological Survey and the Bureau of Soils. Analyses of the brine in Borax or Searles Lake, in San Bernardino county, show 6.78 per cent. of potash, and the amount of the material available is known to be enormous. The potash is believed to be in a readily available form—that is, it can be used as fertilizer without employing any special reduction process—and the climatic conditions of the area in which the deposit occurs are especially favorable to its separation and recovery by solar evaporation. Borax Lake is the last remaining pocket of a great ancient lake, which has almost dried up, thus concentrating a vast amount of saline minerals. Millions of tons of salt, soda and borax cover the surface of the lake, and deposits of soda and borax have been worked, but the development of the potash in the lake deposits had not been considered until recently. California capitalists

are now figuring on the operation of the property, and the potash output may form at least a most profitable by-product, inasmuch as there is great demand for the more common minerals carried in the lake brine.

Collinsville, Okla.

Collinsville, Okla., March 10.

Editor Manufacturers Record:

About six months ago two large smelters moved from Iola, Kans., to this town, and within this short time the population is said to have doubled. The town now has 3500 people. Fourteen new substantial brick buildings are now going up in same. Two large ward brick school buildings have been voted. A large 100-barrel flour mill is ready for the coming season. The Coffeyville brick people have put in a large brick plant. The smelter people continue to enlarge their plants. The town has an electric plant which it just bought from the ice plant people, and will build its own plant in the near future. Sewerage and water mains are now being laid over the city. Paving is in prospect this spring and summer. The country is a prairie country; fine farming country, level and pretty. They are taking out coal in car-load lots right at the edge of the city. A fine grade coal to be had at from 2 to 12 feet deep. The smelters are burning natural gas, with their plants over fine coal beds. Collinsville is 20 miles north of Tulsa and 35 miles south of Bartlesville on the Atchison, Topeka & Santa Fe Railway. Work of all kinds now going on and the demand greater than the supply. We are putting in the third bank for the town, the State Bank of Collinsville, with a capital of \$25,000. JOHN G. BUTLER.

The National Association of Cotton Manufacturers at its annual meeting at Boston, Mass., April 24-25 will discuss cop dyeing, cotton manufacturing waste, decca muslins, cotton classification, cost accounting, mill roofs, sizing equipment, cotton yarn standard, steam efficiency, the bank problem, buying labor and transmission of power by rope.

Developing Clarksburg.

Board of Trade.

Clarksburg, W. Va., March 29.

Editor Manufacturers Record:

We have just completed the formation of a land company under the laws of West Virginia, charter for which was received a few days ago, incorporating with a capitalization of \$125,000, nearly \$80,000 of which has already been subscribed for. The object in the promotion of this company by the Board of Trade was the purpose of purchasing the Southern Farm, lying next to the new fair grounds, and consisting of 230 acres, reserving from 40 to 50 acres for factory sites.

In addition, Judge Goff has opened up his Oak Mound Farm, upon which there are several hundred acres very desirable for factory sites, and for which the judge will entertain propositions upon a very reasonable basis. In fact, prior to the organization of the Clarksburg Board of Trade Land Co. we succeeded in locating upon Judge Goff's farm the Owens Eastern Bottle Co., a new corporation capitalized at \$1,000,000.

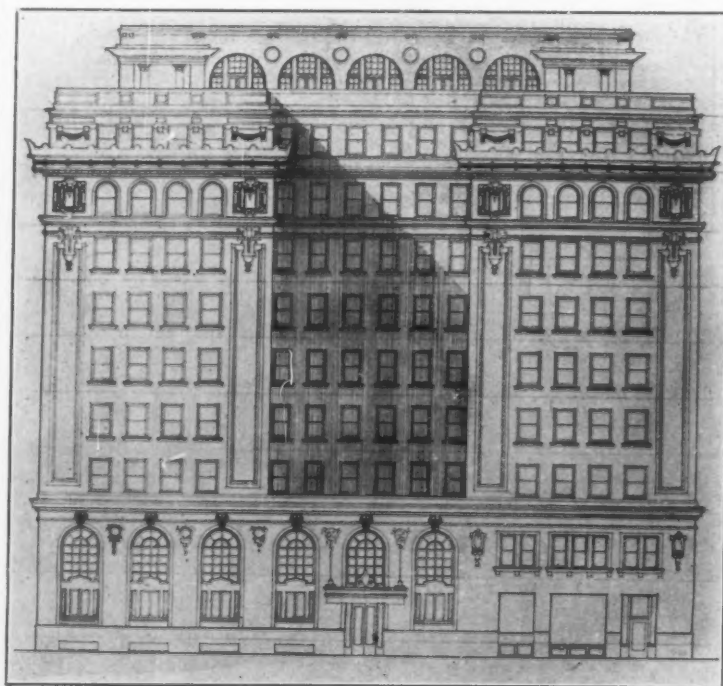
It was also necessary to secure much-needed co-operation on the part of the Baltimore & Ohio Railroad in the way of new industrial tracks in order to be prepared for future development. The railroad management has met us more than half way, and has agreed to extend the switch from Industrial to the Southern Farm, bearing the entire cost thereof, which relieves the land company of an expenditure of about \$20,000. The railroad company has also agreed, when the tonnage justifies it, to make permanent improvements in the way of a bridge and industrial tracks into Judge Goff's Oak Mound Farm. For the present, it will make temporary arrangements with the traction company, which goes through that property.

The railroad company has already made improvements at our passenger depot in the way of rain sheds at a cost of about \$15,000, and Mr. Thompson advised me recently that the contemplated improvements for the freight depot will be made about April 1.

H. V. D. KING,
Secretary-Treasurer.

West Virginia Geology.

There has just been issued from the press a new publication by the West Virginia Geological Survey, Morgantown, W. Va., entitled "Detailed County Report on Jackson, Mason and Putnam Counties," and a case of three maps (topographic, geologic and soil) of the entire area in single sheets, being the largest maps yet published by the State Survey. In addition to the detailed study and description of all the rocks, minerals, soils, streams and industries found within the area, the geologic map gives the structural contours on the Pittsburg coal horizon, as well as the approximate area underlain with that bed. The topographic map shows by contours and figures the elevation of the surface, and its character, whether steep, rolling or level, and in addition gives all the streams, roads, railways, towns, churches, schoolhouses, mines, houses, etc., in their correct locations. The soil map and report made by the experts of the United States Department of Agriculture's bureau of soils should prove of especial value to the agricultural and horticultural interests. Price, with case of maps, delivery charges paid by the Survey, \$2, but in combination with other publications of the Survey, see general circular of same. Extra copies of topographic or geologic map, 50 cents each.



PASO DEL NORTE HOTEL, EL PASO, TEX.

To be erected for El Paso Hotel Co.; 108x134 feet; nine stories; steel and concrete construction; white glazed terra-cotta; lobby 40x60 feet, two stories finished in white marble; dining-room 45x60 feet, two stories, beamed ceiling; about 300 rooms; 22 baths on each floor; glass-enclosed roof garden; cold-storage plant, laundry and heating plant in basement; elevators; cost about \$700,000; architects, Trost & Trost, El Paso; associate architects, Mauran, Russell & Crowell, St. Louis; contractor, Fred A. Jones Building Co., Dallas.

Big Hydro-Electric Plans.

FINANCED BY ENGLISHMEN.

Hydro-Electric Development in Alabama Capitalized at \$55,000,000.

The tendency of English capital to seek investment in the South is again illustrated in the announcement to the MANUFACTURERS RECORD that English bankers have fully financed the Alabama Traction, Light & Power Co., the plans of which for hydro-electric development with an ultimate aggregate of 400,000 horse-power in connection with the Alabama Interstate Power Co. were outlined last week. The capitalization of the holding company, the Alabama Traction, Light & Power Co., is \$55,000,000, divided as follows: \$5,000,000 of 6 per cent. cumulative preferred stock, \$25,000,000 of common stock and \$25,000,000 of first mortgage 5 per cent. gold bonds, of which \$10,000,000 of these bonds are for immediate use. Parr's Bank of London, one of the leading financial institutions of Great Britain, offered \$6,000,000 of the bonds on behalf of the purchasing syndicate, represented by Sperling & Co., London, and these were oversubscribed; \$4,000,000 of the bonds were reported as reserved for sale in New York and Montreal, and the remaining \$15,000,000 are to be issued as required for development work.

The holding corporation owns water-power properties on the Coosa, Tallapoosa and Tennessee rivers, reported as capable of developing 400,000 primary horse-power for 10 hours daily during the driest season on record for 50 years. On the water-heads of these rivers the United States Government has projected important storage reservoirs for regulating floods and improving navigation, the completion of which will greatly augment the available power for development. The company is said to control all the Tallapoosa River powers, except two plants.

It has been proposed that the first development be undertaken at Cherokee Bluffs, in the Tallapoosa River, where there is a favorable power site for the development of 100,000 primary horse-power for 10 hours daily, but the final decision as to the first development is waiting on the reports of the engineers. The proceeds of the \$6,000,000 bond issue are reported as sufficient for an initial development there of 60,000 horse-power, the engineers having estimated that the cost will be \$83 per horse-power. This would include the construction of a masonry dam 550 feet long and 130 feet high, creating a reservoir with a capacity of 65,000,000 cubic feet of water.

The company's Coosa River power site is within a short distance of the proposed transmission line from Cherokee Bluffs to Birmingham, and can be connected with it whenever the capacity of the Tallapoosa River development reaches its limit. Its Muscle Shoals site, on the Tennessee River, has potential power far in excess of the present market for power, but it is not proposed to proceed with this development until after the Government has determined as to its plans for extensive improvements on this river.

Some of the most important cities of the Southeast are located within a radius of 200 miles of the company's powers, and it is believed that the complete Cherokee Bluffs development can be sold within 100 miles of that point. Referring to the company's possibilities, James Mitchell, who, it is understood, will be president of the holding corporation, says:

"In 1908 an actual canvass found a

total of over 65,000 horse-power already installed in Birmingham, Montgomery and the vicinity, and so great has been the increase in the amount of power required for both industrial purposes and the public utilities service that there is now, I believe, at least 150,000 horse-power installed in the district to be served by the company. The president of an important chemical industry has approached us with a view to establishing works in Alabama, taking 15,000 horse-power. An offer has also been made by accepting which the company could close contracts in the city of Birmingham to yield a gross income of over \$440,000 per annum. When in Montgomery I was informed that the Montgomery Traction Co. is purchasing its power at \$23 per horse-power, and the Birmingham Ensley & Bessemer Co. is ready to contract for its needs at practically the same price. For the purpose of estimating the earnings of the company, I have taken \$20 per horse-power per year as the minimum average selling price of power to the largest users, and a maximum average of \$30 to the small users. The plant (60,000 horse-power) should be completed not later than October 1, 1913, and arrangements are contemplated by which it should be possible for the company to deliver about 15,000 horse-power from other sources before January 1, 1913. Of the total present issue of \$10,000,000 bonds, \$6,000,000 is destined for the construction of the hydro-electric power-plant at Cherokee Bluffs and its transmission lines; the balance, \$4,000,000, will be reserved for America, for the purpose of acquiring public utility companies on a basis of earnings at least sufficient to guarantee all fixed charges on this part of the issue, and for the purposes of the company in accordance with the trust deed."

ANOTHER BIG POWER PLANT.

A \$27,000,000 Company to Develop West Virginia Electric Power.

The Kuhn banking interests of Pittsburgh, which have been arranging to utilize the water-power of the Cheat River in West Virginia, propose to organize the West Penn Traction & Power Co., with a capitalization of \$27,000,000, of which \$6,500,000 will be 6 per cent. preferred stock and \$20,500,000 will be common stock. This new company is to acquire various properties and distribute electricity for light and power throughout an active industrial section that includes the famous Pittsburgh district. The American Water-Works & Guarantee Co., James S. Kuhn, president, Pittsburgh, has been purchasing properties and planning the Cheat River development in connection with the Cheat River Hydro-Electric Co., which was previously formed. The American corporation has now submitted a proposition for acquiring the common stock of the West Penn Traction Co., of which William S. Kuhn of Pittsburgh is president, and a special meeting will be held on April 24 to consider it. It writes to the MANUFACTURERS RECORD that soon the engineers will have their plans ready for bids to construct dams, power-houses, etc.

Outlining the project, the American corporation includes, in its announcement to the West Penn stockholders, the following statements:

"During the last three years the American Water-Works & Guarantee Co. has been engaged in the development of a water power on the Cheat River. The Cheat River enters the Monongahela near

the boundaries of West Virginia and Pennsylvania, and close to the district served by the West Penn Traction Co. and the West Penn Electric Co. The water-power development upon this river is not only adjacent to the West Penn Traction Co. and West Penn Electric Co. districts, but it is within a radius easily serving the entire Pittsburgh district, and also the most populous sections of Western Pennsylvania, all of Northern West Virginia and a part of Eastern Ohio. The American Water-Works & Guarantee Co. has undertaken the construction of a dam near the mouth of the Cheat River in the lowest available location on that river for water-power purposes, and is proceeding rapidly with the work of securing real estate necessary for the dam construction and water storage purposes, and to make a complete development of this property for the purpose of generating hydro-electric power. It is estimated that the operating cost per unit of producing electric current will be not to exceed one-third of the lowest possible operating cost per unit for which it can be produced by steam power in this favored district, where coal is of easy access to the plant and can be secured at the minimum price.

"Within the last few months advances have been made to the American Water-Works & Guarantee Co. for the purpose of endeavoring to effect a consolidation of its hydro-electric properties on the Cheat River with the West Penn Traction system, and as a means of bringing about this consolidation the company has made a proposition which affects only the common stockholders of the West Penn Traction Co."

BIRMINGHAM IRON MARKET.

Stronger Rate of Demand from the Regular Trade.

[Special Cor. Manufacturers Record.]

Birmingham, Ala., April 1.

Confirmation of the reported sale of 40,000 tons of Nos. 2, 3 and 4 foundry iron for export by a large local interest cannot be had through local offices. Such tonnage as referred to has been pending for some weeks, and it is not unlikely that negotiations have been closed through Eastern sales offices, from which advices are now being awaited. The tonnage covered by specific information received in the week aggregates from 7500 to 10,000 tons, practically all of which is for delivery prior to the beginning of the last quarter. The largest single transaction involved 2500 tons of Nos. 2 and 3 foundry for shipment extending into the third quarter. Except for certain small lots for spot delivery, the price consideration in the majority of cases was a basis of \$10.50 per ton at Birmingham for No. 2 foundry. The small lots mentioned have in some cases brought \$10.75 per ton for No. 2 foundry, with \$11 per ton the consideration where stipulations as to analysis were out of the ordinary. A leading producer has just announced an advance to a basis of \$10.75 per ton for No. 2 foundry, for shipment in the third quarter, with \$11 for No. 2, the price for strictly last quarter deliveries. The majority of the producers are apparently unwilling to now enter tonnage for shipment after the first half, but would probably except third quarter contracts at an advance over the \$10.50 schedule. Prices are being quoted on last quarter deliveries by one concern only so far.

With the publicity given the recent demand for export shipments, the demand from the regular trade has come forward at a decidedly stronger rate. Practically all quarters of the foundry trade are now making inquiry, and even the comparatively small melters are in many cases disposed to provide for requirements over

the remainder of the year. It is noted that shipments from furnace yards kept up remarkably well all through the month of March, thereby indicating further the actual increase in the rate of consumption. From all indications, the stocks now on foundry yards are no larger in proportion than the stocks on furnace yards, and this last will no doubt show a material decrease when the last figures are in. The tonnage that was exported in the month of March was probably larger than for any one month in some years, and was considerably larger than indicated by the tonnage reported sold for such shipment. The prospects for the month just entered are considered exceptionally good. At this time one or more round tonnage propositions are under consideration, and a very large volume of small orders is pending. So far, but little is heard of re-sale iron, and in view of the fact that indications for some months did not favor any advance in price, it is believed that in the majority of cases the tonnage bought for speculative purposes has been disposed of. Of course considerable tonnage is under warrant, and these warrants have been sold outright in many cases; but the aggregate of warrant yard stocks was reduced in February and will probably show further reduction to have been made in March. There has hardly been sufficient trading in basic iron recently to afford a criterion of that market. The entire local output is being consumed at local plants, except an occasional lot of especial analysis. For charcoal iron prices are very firm and the output at the two stacks in operation is being well taken care of. Asking prices for the several grades, which apply to shipments in the first half and extending into the third quarter, are as below, per gross ton, f. o. b. cars at Birmingham furnaces, viz:

No. 1 foundry, \$10.75 to \$11.

No. 2 foundry, \$10.25 to \$10.75.

No. 3 foundry, \$9.75 to \$10.25.

No. 4 foundry, \$9.25 to \$9.75.

Gray forge, \$9 to \$9.50.

Standard basic, \$10.25 to \$10.75.

Off basic, \$10 to \$10.25.

Standard charcoal iron, \$22 to \$23.

An advance of \$1 per ton on the base price for bars, plates and other finished material has become effective, and the volume of business being placed has not been checked to any appreciable extent. The demand for wire fencing and for wire nails is considerably stronger and the movement has been affected accordingly. A considerable tonnage of light steel rails has just been placed. There has also been some trading on relaying rails of 35-pound to 50-pound sections. For this just mentioned, recent quotations were around \$22.50 per gross ton at Birmingham for 35-pound sections. This class of rails is required by the lumber mill interests principally, and prices are more correctly based on delivery at New Orleans, La., or Gulfport, Miss. New light steel rails are quotable at from \$12.75 to \$13.00 per hundred-weight at Birmingham, which is for 12-pound to 30-pound sections.

Considerable tonnage of old material is now being exported from New Orleans, La., and other Gulf ports, and a larger movement to Northern and Eastern mills is reported. Local accumulations are small comparatively, but along the Gulf coast and at the various sawmill plants in Southern Mississippi and Louisiana considerable tonnage is available. This applies more particularly to machinery and wrought grades, although practically the available tonnage of relaying rails, old axles and carwheels is in the territory just referred to. The status of

prices is very uncertain, owing to the nature of demand and point of shipment, but the schedule below, per gross ton, f. o. b. cars at Birmingham, Ala., is considered a fair representative. The asking prices are:

Old iron rails, light, \$12 to \$12.75.
Old iron axles, light, \$12.50 to \$13.
Old steel axles, light, \$11 to \$11.50.
No. 1 railroad wrought, \$11 to \$11.50.
No. 2 railroad wrought, \$9.50 to \$10.
No. 1 machinery, \$9 to \$9.50.
No. 1 country, \$7 to \$7.50.
No. 2 country, \$6.50 to \$7.
No. 1 steel, \$8.50 to \$9.
Tram car wheels, \$8 to \$8.50.
Standard car wheels, \$9.50 to \$10.
Light cast and stove plate, \$6 to \$6.50.

No change is yet noted in the steam coal situation, but owing to the favorable indications for an early adjustment of labor disturbances in foreign fields, local operators are less disposed to sell for export and bunkering use, preferring to apply the tonnage against contracts for home consumption. It is noted that all of the railroad companies, as well as the other large consumers, are storing coal against a probably shortage, while Alabama domestic coal is being sold in large quantities to take the place of anthracite coal, by reason of the probable inability to deliver this later. Certain brands of coke are also moving at a very heavy rate for the reason just given. Bids have just been asked on three railroad coal requirement for the coming fiscal year, aggregating some 250,000 tons of run-of-mine grades to be contracted for within the next thirty to sixty days. Specifications have also been submitted on several municipal requirements and for use at the various oil mills and fertilizer plants during the next season. All tonnage reports for the domestic season just ended are not yet in hand, but from indications the movement to Southern points during the past winter was the largest of many years, which is accounted for by the substitution of Alabama coal for hard coal from the Pittsburgh district, as well as by the unusual heavy consumption. The consumption of steam coal from Alabama fields will also be shown as larger than for previous years, which is in excess of the tonnage recently delivered for export and to vessels that formerly coaled at other stations.

Other than several small requirements for municipal work, no additions have been made recently to the cast-iron pipe lettings for an early date. The general outlook is considered good, and note is made of several bond issues for waterworks improvements at points not heretofore taken into consideration in arriving at the tonnage to be placed. Operations at local plants are normal, and the movement against all contracts is very satisfactory. Quotations have not been changed, but owing to a stronger raw material market all prices are firmer, especially for large contracts where a significant portion of the output at any one plant would be involved. Class "B," or water pipe, is quoted as follows, per net ton, f. o. b. cars here: 4 inches to 6 inches, \$23; 8 inches to 12 inches, \$22; over 12 inches, average \$21, with \$1 per ton extra for gas pipe. Special fittings are quotable at from \$45 to \$55 per net ton at foundry.

Local executives of the Tidewater Development Co. have just announced the purchase of the real estate and buildings of the Empire Plow Co. at Ensley, Ala., for the location of a car repair shop. The purchase price is not made public, but as the property involved is adjacent to that of the Tennessee Coal, Iron & Railroad Co., it is quite probably that a large ex-



NEW OFFICE BUILDING AT LOUISVILLE.

Erected for company organized by Harry L. Lewman and others; 52½x105 feet; 10 stories; steel and concrete construction; fireproof; faced with Georgia marble to third story sill course; above with pressed brick and terra-cotta; interior finish of quarter sawed oak; floor space about 35,000 feet; 180 rooms; cost \$245,000; architect, H. Wolters, Louisville; contractor, Falls City Construction Co., Louisville.

penditure was necessary. The construction of the electric line from Ensley, Ala., to East Lake, Ala., has progressed very rapidly, and will reach the pavement on Fifth avenue, in Birmingham, within a very short time.

In line with mention in last report, the engineers of the American Radiator Co. of Chicago, Ill., have just inspected several local sites for the location of the new plant proposed. This company formerly leased the plant of the former Birmingham Pipe & Casting Co. in this city, and have operated same for two years apparently successfully. It is understood that the new plant proposed will be sufficiently large for the manufacture of sectional boilers, in addition to the full line of steam and hot-water radiation.

The formal merger of the properties of the Birmingham Coal & Iron Co. with those of the Woodward Iron Co. is expected to be announced within a very short time. It is understood that all of the several details have been fully worked out, and it has been definitely announced by the Woodward interests that a steel plant will not be built after the merger.

The relining of No. 4 furnace at the North Birmingham (Ala.) plant at an approximate cost of \$17,500 has just been authorized by the Sloss-Sheffield

Steel & Iron Co., and the work will be commenced promptly. It is understood that a conference of the officials of the company just mentioned with State officials will soon be held to discuss the present contract for the lease of certain convicts now being employed in the mines of the Sloss Company. Developments in this regard are being awaited with considerable interest, especially by the other coal mine operators.

Improvement in Iron Market.

[Special Cor. Manufacturers Record.]
Cincinnati, April 1.

Referring to the market for pig-iron, the situation has certainly greatly improved. In the first place, sentimentally, the market is better; men have become convinced that the bad times are behind us, that the tide has ceased to ebb and has begun to flow, that we are now no longer going down-hill, but have started on the upward path. There is not so much pessimism prevalent in business circles; in fact, there is a very clear note of optimism. Actually, according to statistics, things are very greatly improved. Prices have been much depressed by what has seemed to the trade to be an enormous accumulation of pig-iron in furnace yards. As a matter of fact, this

accumulation at no time was a surplus reserve of sixty days ahead, but none the less the fact that there was a surplus stock weighted prices. For nine months now this stock has been steadily declining, and in this period it has been practically cut in half. Consumers have not been piling iron in their yards; they have been using it. So it is very plain that for some time past the country has been consuming more iron than it has been making. The present output of the furnaces is not sufficient to meet the daily needs of the foundries and they have been obliged to draw upon the furnace stock.

Prices in the South are \$1 above the low point, which they reached in November. In the North the advance is from 50 cents to \$1. These advances in price, of course, are disappointing to the iron masters, because they do not mean as yet that iron is on a profitable basis. They are not losing as much money as they were losing, but they are still playing a losing game. However, as the movement at large is in the right direction, iron masters have taken heart. The general expectation is that we shall not have a year of particularly good prices, but that we shall have a year of large business with advancing prices, the general average of which would be so low as to greatly stimulate the volume of trade. When finished materials can be bought on such a basis as that which prevails today, there is every reason for the consumer of these materials to use them largely; to make his new installments now while he can do it cheaply; come in early, so to speak, and "avoid the rush."

We ourselves are very emphatically of the opinion that the worst of the troubles which came with the panic are now safely behind us. MATTHEW ADDY & Co.

Navigation Congress.

Benjamin Thompson, consulting engineer, of Tampa, Fla., writes the MANUFACTURERS RECORD with reference to the Twelfth Congress of the Permanent International Association of Navigation Congresses to be held at Philadelphia in May:

"I am a member of this organization, and from the data I have received and the scope of the work done and to be done by it, it seems to me that it will be of great usefulness to the entire seaboard of the United States, and that the sooner the people who have to do with maritime matters and all things pertaining to them have information about the organization and the possibilities for good wrapped up in it, breaking out whenever there is an opportunity, the better it will be. The proper and wise construction of all facilities at our ports for the distribution and handling of shipping tonnage should keep pace with the improvements made in land transportation facilities. The railroad companies are and have been spending immense sums of money to enable them to correct what are now seen to be mistakes in construction. If retained, although in some instances they have seemed right and proper when first planned. The volume of business at present and the increase are to come in all shipping would appear to make it plain to those who expend money in construction at our harbors that the best planned and best executed construction will be the best, and what should be decided upon. This organization seems to me to be a valuable and important one, and its work will be of great interest to the people."

The total production of phosphate in Tennessee in 1911 was 542,761 long tons, an output exceeded in any one year only by that of 1907.

Southern Cotton-Mill Men in Session at Washington.

[Special Correspondence Manufacturers Record.]

Washington, D. C., April 3.

The sixteenth annual convention of the American Cotton Manufacturers Association, which is being held here this week, in addition to providing a program of excellent papers on various phases of the industry, will thoroughly discuss the contemplated change in the tariff by Congress reducing the duties on manufactures of cotton, a matter that is viewed with considerable apprehension by the members of the association.

The papers read before the meeting, and which were followed by discussion on the part of the members, were as follows:

Annual Address, by President Ellison A. Smyth, Greenville, S. C.

"Work of the Bureau of Manufacturers," by Hon. Charles Nagel, Secretary Department of Commerce and Labor.

"Illuminating Engineering Co-operation," by G. H. Stickney of the General Electric Co.

"Does the American Cotton Industry Need the Plant Breeder?" by D. R. Coker, Hartsville, S. C.

"The Boll-Weevil Problem," by Dr. W. D. Hunter of the United States Department of Agriculture, Dallas, Tex.

"A Trip in Africa and the Red Sea Districts in Connection with the American Cotton Goods Trade," by Edward C. Sufferin, New York, N. Y.

"Central and South American Markets for Cotton Goods," by Hon. John Barrett, Director-General of the Pan-American Union.

"Modern Mill Construction," by J. E. Sirrine, Greenville, S. C.

"Cotton Exchanges, Producers, Cotton Merchants and Spinners," by George W. Neville, president New York Stock Exchange.

"The Lancashire Cotton Trade," by J. M. Hause, Department of Commerce and Labor.

The following committees and officers will make their reports tomorrow at the business session, when the officers for the ensuing year will also be elected:

Bills of Lading—A. A. Thompson, chairman.

Cotton Exchanges—Lewis W. Parker, chairman.

Tariff and Other Legislation—R. M. Miller, Jr., chairman.

Resolutions—James D. Hammett, chairman.

Nominations—Arthur J. Draper, chairman.

Secretary and Treasurer—C. B. Bryant.

Following the adjournment of today's session, the members and guests of the association were received by President Taft in the East Room at the White House.

In striking contrast was the meeting of this year compared to the last annual meeting, held in Richmond. Then many mills were shut down, and some even on the verge of bankruptcy, and conditions generally were disheartening, with no outlook for improvement. Now there is said to be not a single mill idle in the whole South, business is steadily improving, with a promising season ahead, the only threatening cloud being the possible lowering of the tariff on cotton goods. In talking with one prominent cotton manufacturer, he stated that, so far as he knew, every mill in his State was running practically on full time, and that last month showed a marked improvement, with prices for goods yielding a fair margin of profit.

Of course, he added, this is more noticeable in certain lines of goods than in others, but that the general situation was encouraging, and prospects were excellent for a continued improvement for some months to come.

In attendance upon the meeting were quite a large number of representatives of manufacturers of textile machinery and supplies. Many of these have recently been through all parts of the South in the interest of their companies, and they were all enthusiastic regarding improved conditions in the industry in that section. Not only, they stated, were all of the mills practically running on full time, but they were installing here and there

throughout the mills new or improved equipment, and generally shaping up their plants for busy times. At various places plans are also being made for carrying forward the construction of new mills, and there is but little doubt that with the continued improvement of the industry additional mills will be erected.

At the request of the association, both the New York and the New Orleans Cotton Exchanges sent special committees to attend the convention, in order to confer and discuss matters with the members.

The Bureau of Manufacture, Department of Commerce and Labor, made an interesting display of various cotton goods made by different European countries and sold in different parts of the world. The object of this exhibit was to give some idea to the American cotton manufacturers of the character and quality of the different grades of goods in demand in foreign markets. Following are abstracts of some of the papers presented:

PRESIDENT ELLISON A. SMYTH'S ANNUAL ADDRESS.

The year 1911 will go down into the history of the cotton manufacturing trade of the United States as one of the most harassing, unprofitable and disappointing. It was impossible to buy much raw cotton below the 15-cent basis, and with a large crop promising, and the goods market not in position to take care of a full output, curtailment of production was the order of the day, and throughout the entire country, North and South, mills were more or less running on short time. Even then, however, it was soon apparent that the demand for goods, at or below cost of production, was not sufficient to take care of the supply, and after events showed that the whole industry would have been in a sounder condition if a general curtailment, lasting two or three months, had been enforced. One difficulty was that consumers of goods were able to supply their immediate wants from the surplus that had been stored away, and mills were forced to sell at the best prices they were offered. Perhaps never before was there so irregular and uncertain a market, and quotations were far from being reliable. Buyers paid only what they were forced to pay when they needed goods, and substitution of low counts and light weights was the rule, and this condition continued until the fall, when lower-priced cotton enabled manufacturers to name a still lower price for their product, and buyers then saw it was to their advantage to insist upon securing the standard weights and counts.

It has been noticeable, however, that the decline in the price of cotton has been even exceeded by the decline in the value of the manufactured product, and cotton mills have been unable to secure any better profits on 8 to 9-cent cotton than they had secured on 13 to 14-cent cotton. Perhaps the cotton mills would have been better off if the price of raw cotton had not dropped below 11 cents, as on that basis the market seemed more steady and values more permanent than since lower prices for cotton have prevailed. We are now facing a new crop, and the uncertainty as to its possible size and possible selling prices continues, but it is commonly reported that large purchases of cotton, extending over a period of several years, have been made by mills in this country and abroad, based upon lower prices than prevailing at present, and it is to be hoped that this will be one steadying influence in maintaining prices.

One gratifying feature of the past year has been the systematic investigation of export markets, both for the purpose of regaining fields that had been opened, and also for the purpose of investigating and

securing new markets. It has been stated that the Cone Export & Commission Co., Grinnell Willis & Co., a group of South Carolina mills consisting of Pelzer, Piedmont, Easley, Belton and others, the American and Algonquin printing companies, the J. Spencer Turner Company and the Pacific Mills have been making investigations at their own expense and have had representatives in foreign countries, seeking information as to the needs of those countries and securing orders. It is also stated that the Putnam-Hooker Company of Cincinnati has sent its New York representative to South America for the same purpose, and Woodward, Baldwin & Co. have maintained their own representative in China, who has been located at Shanghai for a number of years. The exports of cotton goods for the seven months ending January 31, 1912, show over 253,000,000 yards exported, as against 186,000,000 yards for the same period in 1911, and 188,000,000 yards for the same period in 1910. I believe that American manufacturers are becoming fully alive to the importance of maintaining and increasing their export trade, and that efforts will be made year after year looking toward systematic efforts to secure a share of the trade of the world that fairly belongs to the American mills.

The export business with the Philippine Islands has shown marked increase during the past year, and business with China was in a very gratifying and satisfactory volume until the present rebellion and internal disturbances, which have assumed very large proportions, and naturally have caused a prostration of business in certain parts of China, and caused a stoppage of all buying on the part of the Chinese merchants. It is believed, however, that the result of the present political agitation will only result in good, and that our country particularly will benefit by the agitation, but it will be necessary for our Government to maintain, without hesitation, the principle of the open door in China, which movement was inaugurated by the great Secretary of State, Mr. Hay.

Perhaps the subject that has given American manufacturers most concern during the past six months has been the proposed revision of the cotton goods tariff. At your last meeting, on May 18 and 19, 1911, in Richmond, a standing committee of not less than 15 was appointed on the tariff and other legislation, whose duty it was to act for and represent the association and co-operate with committees from other organizations in all matters of legislation, and that meetings of the same be subject to the call of the chairman of said

committee. The committee, when appointed, consisted of representatives from North Carolina, South Carolina, Georgia, Alabama, Mississippi, Kentucky, Tennessee and Texas, so that all sections of the South should be represented and take part in the deliberations of the committee. This committee had a conference in Washington, June 6, 1911, with committees from the Arkwright Club and the National Association of Cotton Manufacturers, and prepared a brief which was submitted to Chairman Underwood of the Ways and Means Committee of the National House of Representatives, and the joint committee asked for a hearing before the Committee on Ways and Means on the subject then being considered by the Congressional committee, namely, the cotton schedule, but the Democratic majority of the committee refused to meet with our representatives. Our tariff committee also prepared several very able and interesting bulletins explaining the working of the present tariff, a copy of which was sent to each manufacturer, and also submitted to the Congressional Committee of Ways and Means of the House. It is admitted, of course, that no tariff ever proposed was perfect or absolutely fair and just, but our association is on record at its meeting in May, 1909, as in favor of a tariff board or commission to investigate conditions under the present tariff and suggest changes that might be desired. As such a board had been appointed, and was investigating the cotton-mill conditions in the United States, it seemed fair and business-like to wait a few months until that board could give to Congress the benefit of its investigations before proceeding hurriedly to prepare a new cotton goods tariff, and the majority, I believe, of cotton manufacturers in this country were gratified when President Taft vetoed the crudely-prepared tariff bill which had passed the Congress. I do not pretend to say that the tariff should not be changed in some respects, but I do claim that it should be changed only after patient and thorough investigation and based on accurate information. What appeals, perhaps, most strongly to Southern manufacturers is not the question whether the cotton tariff is just and right and proper, but the fact that it is a condition, as Cleveland said, not a theory, that confronts us, and Southern manufacturers have been instrumental in securing investments of millions of dollars in Southern cotton mills, under existing conditions and under present costs, which investments would be sadly jeopardized and impaired by radical and sudden changes in the tariff.

Your committee on cotton exchanges have had one or two conferences with the New York Cotton Exchange, and will doubtless be prepared to make a further report to you at this session.

I would suggest for further consideration by our association the appointment of a committee on rules for cotton buying, seeking some uniformity of action with manufacturers, North and South, and establishing rules that will be uniform, generally observed and alike fair to buyer and seller, and providing for the settling of disputes without recourse to the courts.

The gray goods contract which was prepared by a joint committee from our association and the National Association, and formally accepted by our association, has made slow progress in being put into general use, but we believe that this form of contract will be in the future the generally adopted form and basis of trading, and it is to be hoped that the contract will become gradually and steadily in use, and that sentiment will so crystallize around it that the widespread cancellations that

we had in 1908 and the disputes that followed will be avoided.

You have doubtless read the report from the Bureau of Labor of the United States Government, to be found in Vol. XVI of the Report on Women and Child Earners, on typical cotton-mill workers, which is unfair and unjust to Southern cotton-mill people, and doubtless is also to those of New England. One glaring omission that is always to be found in the so-called investigations of professional philanthropists or paid emissaries is a fair comparison of present conditions and standard of living with former surroundings, and in this report it is conspicuously lacking. It is also always noticeable in the so-called investigations of Southern mill conditions that isolated cases of hardship and low standard of living are greatly

exaggerated, and the many mill villages in our Southern States, with a contented, prosperous population, surrounded by many comforts, and those people maintaining a high standard of living, are purposely overlooked and unnoticed. Senator Overman of North Carolina has made a manly defense of the Southern cotton-mill people on the floor of the United States Senate, and Representative Steadman of North Carolina and Representatives Bartlett, Tribble and Adamson of Georgia, later in the House of Representatives at Washington, were outspoken in their condemnation of the report of the Bureau of Labor, in so far as it referred to Southern mill conditions, and the thanks of the association are due to Senator Overman and Representatives Steadman, Bartlett, Tribble and Adamson for their eloquent defense of our employees.

COTTON EXCHANGES, PRODUCERS, MERCHANTS AND SPINNERS.

By GEO. W. NEVILLE, President New York Cotton Exchange.

Mr. President, and members of the American Cotton Manufacturers Association: In accepting the invitation of your president to address you today, I asked him what he wanted me to talk about. "Anything," was his reply, and as this was a specific subject you can readily understand that I knew then what was in his mind, but how to get it out of his mind and into language was another thing.

However, in a gathering of this nature there are only two subjects to talk on, viz.: raw cotton and finished cotton. Nature has given us a large supply of raw cotton this season, and the molders of feminine fashions have decreed that the ladies shall wear more yards of cloth in their garments, and as one of my friends with a mathematical mind figured the scanty attire of the fair sex cut out at least 12 yards of finished goods per adult female inhabitant of the civilized world, this scant attire cut a very large figure and was a contributing factor to the small demand for finished goods the past two years.

Worthy of mention here is the enormous yield of cotton this season in the oldest cotton-growing States: North Carolina, 1,152,000 bales; South Carolina, 1,722,000 bales; Georgia, 2,867,000 bales, and it may be of interest to some of you not conversant with the production of cotton in its details that from 1791 to 1811 South Carolina and Georgia produced practically the cotton crop of this country. The yield of lint per acre in the States producing large quantities of cotton is still at its maximum in North Carolina and South Carolina, notwithstanding they are the oldest cotton-producing States.

With the increased acreage and larger crops, the increased spindleage in the South, the change from coarse to finer goods and the inroads of the Mexican weevil in Louisiana, Mississippi and Arkansas, the development of staple cotton cultivation has been forced in the Atlantic States, and by seed selection and plant breeding South Carolina has surprised the cotton world this season by the production of 1 3-16-inch to 1 5-16-inch staple cotton, and we may expect to see a large production of this character of cotton the coming season in the Atlantic States.

It was my pleasure to preside at a conference of representatives of your organization, the National Association of Cotton Manufacturers and the New Orleans and New York cotton exchanges, to consider suggestions that the two spinning organizations wanted to make, and during the discussion it was plain that a good part of your antagonism to cotton exchanges was due to your not being familiar with the by-laws and rules and the

economic functions of the cotton exchanges.

Cotton exchanges, to perform their true services to the entire cotton trade, must have their rules and by-laws such as will provide facilities to farmers of the South, through the cotton merchants, that will give a constant daily market for all merchantable and spinnable cotton that weather conditions enable the farmers to produce. It is wise, however, to have some limitations as to the lowest grade deliverable on a contract of sale for the future delivery of cotton, although I believe in giving a grade for every kind of cotton that is usable, in order that the farmers may have some way of determining the value of their product.

Your organization has been very urgent to make the lowest grade deliverable on contracts low middling. To do this would be treating the farmers of the South unjustly, and as each contract for 100 bales of cotton traded in on any cotton exchange calls for the delivery and acceptance of 100 bales of cotton, all cotton exchanges should provide for the acceptance on contracts of purchase and sale of all merchantable cotton raised by the farmers of the South. There are seasons when the qualities of cotton produced are such that there are very few bales of grades below low middling, and when this occurs you have a low middling contract; but there are seasons (this one, for instance) when, for some reason, the qualities below low middling are superabundant, and the facilities of the cotton exchanges, in justice to the bale of cotton, should provide a constant daily market for such grades. The lowest grade deliverable on contract is good ordinary, and this is a good spinnable grade, usable in every mill where yarns are dyed or printed.

Cotton exchanges represent the evolution of the trade of the cotton merchant, who distributes the cotton as the farmer produces it and supplies you gentlemen with the qualities you require to make the special lines of goods you manufacture, and, by the way, you gentlemen all seem to think the farmer produces nothing but strict middling cotton. The other grades which the farmer has to sell and the cotton merchant has to buy, to get you your strict middling, have to be taken care of, otherwise the element of speculation on the part of the cotton merchant would be so great that the merchants, having to do with the distribution of the cotton from farmer to spinner, could not buy from the farmers as freely as they do now, because the risk of fluctuations would be greater than the margin of profit that exists today. The evolution of this feature of the business developed the cotton exchanges, where buyers and sellers meet and trade

in contracts for the future delivery of cotton. The New York Cotton Exchange was organized primarily by the cotton merchant for his protection against price fluctuations, and here I wish to take issue with my learned predecessor in his statement that it was created for the cotton merchant alone. Cotton exchanges provide facilities for all cotton interests, whatever may be the lines of their endeavor, and to the investor as well. The membership of the New York Cotton Exchange today embraces merchants residing in practically all of the cotton-producing States, bankers, spinners and some engaged in planting cotton. If cotton manufacturers only sold their goods when the cotton was being marketed, and the farmer only marketed his crop when the mills sold their goods, there would be no use for cotton exchanges; but, gentlemen, this is not or never has been the method of the business. You gentlemen have opportunities of selling the product of your mills for many months ahead, at a time when there is very little cotton being marketed, and to buy this cotton (if it existed), warehouse, insure and borrow money to carry it until you could convert it into finished goods or yarn, would enhance the price to such an extent that your over-sea competitor, by using the Liverpool contract market, would get the business. Consequently, you either buy contracts for the future delivery of cotton on some cotton exchange or buy your exact quality from some reliable cotton merchant, and he, in turn, buys contracts for the future delivery of cotton on some cotton exchange to protect himself against price fluctuations, depending upon the price at which he sold you your quality to give him his profit. This method fixes the cost of your raw product when you sell your goods, without depreciating the price to the producer.

The New York Cotton Exchange does not trade in contracts for the future delivery of cotton. The members of the New York Cotton Exchange in New York trade on the floor of the New York Cotton Exchange in contracts for the delivery of cotton, both for immediate delivery and for delivery in the future on the basis of middling. This is necessary, as at the time when large business is possible with you, the quality nor quantity of the crop is not ascertainable, and the basis middling contracts has to be broad enough to take care of all merchantable cotton raised; and through the inspection bureau of the New York Cotton Exchange its members accept delivery of cotton against a purchase of contracts for future delivery, good ordinary to fair, low middling tinged to strict good middling tinged, and middling stained, provided it is merchantable cotton, which is defined by section 42 of the by-laws:

"Merchantable cotton shall be understood to be cotton as gathered upon the plantations of the United States, ginned with the usual machinery and with customary care, and showing no indication of fraud.

"Unmerchantable bales, which shall invariably be rejected, shall be understood to include false-packed bales, bolley, threshed or machined cotton, and bales that show an excess of seed, sand or dirt, rebaled to the above definition of merchantable cotton, it being the intention of this section that only the regular run of cotton, as picked from the fields of the cotton States of the United States, shall be considered merchantable."

All cotton submitted for delivery is inspected on the docks by employees of the inspection bureau, and as bales are accepted they are given lot numbers, such lot numbers having a letter to denote the warehouse system where the cotton is stored. The samples are then taken to the classification room, each sample broken in three parts, one part aired for 24 hours, the second part put away and kept by the inspection bureau during the life of the classification certificates, and the third part is delivered to the merchant offering the cotton for inspection. The original is then classed by two members of the classification committee, and this committee is not permitted to engage in any other business. The inspection bureau of the New York Cotton Exchange guarantees to the holder of a grade certificate the grade mentioned in this certificate, under rules to this effect. Each 100 bales of cotton, or 50,000 pounds, has to be covered by warehouse receipts and grade certificates bearing the same warehouse letter, and no delivery is deemed as in fulfillment of a sale that has warehouse receipts bearing two different warehouse letters, and the party attempting such delivery is penalized heavily.

The present management of the New York Cotton Exchange has under consideration certain changes in the system of inspecting and certificating of cotton that will, in our opinion, facilitate the delivery, the acceptance and shipping of cotton from the warehouses in New York.

The classification in use by the New York Cotton Exchange is the American Standard Classification adopted by the National Cotton Exchange in June, 1874, whose membership embraced all cotton exchanges then in existence in the United States.

The New York Cotton Exchange has continued this classification, and will continue to do so until such time as other carefully prepared standards take their place.

The Government Standard Classification, to be complete, should have standards made from Upland or Atlantic States cotton, which cotton is the basis of all cotton traded in for future delivery on all cotton exchanges and is the quality quoted in all markets the world over where American cotton is bought or sold. The New York Cotton Exchange has been criticised and threatened for not adopting the Government standards. We are willing to meet this criticism, and have no fear of the judgment of cotton people in the position we have taken on this question. We have always stood for uniformity in classification, but just for uniformity's sake we are not going to adopt a standard that does not represent the quality of cotton traded in on any cotton exchanges in the world for the future delivery of cotton, or that does not represent the character of cotton quoted daily in all cotton markets of this country and Europe.

DOES THE AMERICAN COTTON INDUSTRY NEED THE PLANT BREEDER?

By DAVID R. COKE, Hartsville, S. C.

The steady advance of the boll-weevil into the cotton belt has produced alarming results. Most of the best upland cottons formerly produced in the United States were raised in the western portion of the cotton belt, nearly all parts of which have now been invaded by the weevil. The varieties generally planted there were late

in maturing, and, being unsuited to boll-weevil conditions, have been mostly abandoned. In their place have been introduced the earliest and shortest staple varieties, for only these mature in time to get ahead of the weevil.

The general introduction of extremely short varieties into so large an area has

caused a distinct decline in the average staple of the American crop. As the boll-weevil advances this decline will continue unless counteracted by prompt and intelligent effort. Spinners of long staple uplands are now confronted with a serious shortage of 1 3-16-inch to 1 1/2-inch cotton, and it seems doubtful that a sufficient supply of these lengths will be produced this year to fully supply the demand. Besides, it is no longer possible to get at moderate premiums 1 1-16-inch to 1 1/2-inch cotton, of which the western part of the belt formerly furnished an abundant supply.

Under these circumstances it would seem that the whole body of American cotton spinners would eagerly welcome and aid in promoting any plan which may be expected to arrest the progressive deterioration of the American cotton crop which appears to be now going on. If any plan offered gives promise of distinctly advancing the crop in length and spinning quality beyond any previous maximum, it would seem an additional reason why the spinner should bestir himself in its behalf.

The problem, I think, can be solved by promoting the scientific breeding of cotton for length, earliness and high yield. By distributing the seed thus bred and at the same time disseminating among the planters by bulletins, lectures and institutes a sufficient knowledge of plant breeding to enable them to at least keep their seed from deteriorating. By instructing the planters in correct methods of handling and marketing staple cotton, and by awakening the cotton trade to the necessity of providing good markets for staple cottons and also to the desirability of paying more attention to the length and uniformity of all cotton.

At first blush the accomplishment of all this would seem to be a great, if not an impossible, task, but I am convinced that it can be done by well-directed co-operative effort.

A number of influential agencies are now earnestly working for the general betterment of agricultural conditions in the South. Among the most important of these are the United States Department of Agriculture, the agricultural departments of the various States, the agricultural colleges, some of the agricultural journals, the Farmers' Union and the Southern Railway.

If these agencies should become convinced that a very great benefit would accrue both to the farmer and to the spinner from a thorough campaign of education in favor of scientifically bred and more carefully handled cotton, it would be only a short time before results of large value would be obtained.

It seems to me that much could be accomplished in calling attention to the immense importance of this work and in securing the desired co-operation for its promotion by a carefully selected committee of your organization with sufficient funds at their disposal. Under their direction literature on this subject could be prepared and distributed, and, I think, with proper effort all the agencies mentioned above and a number of others could be brought into close co-operation for the purpose of seconding your committee's propaganda for the betterment of the quality of the crop.

It may not be known to all of your members that considerable work along some of the lines mentioned above has already been done in South Carolina.

Upland cotton breeding was begun in our State about 12 years ago by Dr. H. J. Webber of the Plant Breeding Bureau of the United States Department of Agriculture. Within six or seven years he had developed from short-staple selections two most excellent varieties of 1 3-16-inch to

1 1/2-inch staple, which he named Columbia and Keenan. Both of these varieties have ever since their introduction been regularly producing at least as much cotton per acre as the average of the short-staple sorts.

The writer also took up cotton breeding about 10 years ago, and has produced one variety by the selection of notably good plants from a short staple variety and breeding from the best of their progeny in each generation for five years. I have also produced another variety by selection and breeding from one excellent plant of Columbia variety. This breeding work is being carried steadily forward at Hartsville, with constantly broadening scope, not only with cotton, but with many other economic crops as well, and we now have a well-equipped and efficient plant-breeding organization, which is an important department of our business. One phase of our work of which I expect much is the propagation of some notably early and productive strains of staple cotton which I hope will perfectly meet the requirements of the boll-weevil district and which I expect to have in sufficient quantity for distribution before the weevil reaches our State.

According to the South Carolina Experiment Station records, my established varieties possess the desirable characters of high yield, long lint and even staple. I have had a hard fight to convince our staple spinners that these pedigreed staple varieties are entirely different from the old, non-productive, wasty staples which were formerly produced in small amounts in our territory, but I can say that those who have tested them to any extent now buy them freely on at least equal terms with Western staples, and some have expressed a decided preference for them.

The farmers who have planted my "Hartsville" variety for several years have regularly made larger yields than with the short cottons they have tested against it, and, besides, it is much easier to pick, does not fall out of the burr, makes very high-grade lint, and, under good conditions, turns out a staple of 1 3-16 inches length. My newer variety, which I have named for Dr. H. J. Webber, the father of upland cotton breeding, is much longer in staple and apparently more productive than any cotton, long or short, which is planted in our vicinity.

About three years ago the Cotton Manufacturers' Association of South Carolina contributed a considerable sum of money to be expended by the South Carolina division of the United States Farm Demonstration Bureau in the testing and distribution of the new pedigreed staple cottons. One of the prominent mill treasurers of the State also contributed liberally to this fund, and he and a number of other prominent spinners and also our secretary of agriculture have given much encouragement to this industry.

The result so far has been that a large proportion of the staple cotton needed by South Carolina mills during the current year has been produced within the borders of the State, and, unless all signs fail, South Carolina will produce more than enough staple cotton this year to supply all the staple spinners of both North and South Carolina.

The territory contiguous to the town of Hartsville produces more staple cotton than any equal area in the State. Last year fully 20 per cent. of the cotton produced in our section was staples, and this year about three-quarters of the acreage will be seeded to staple varieties.

During the past few years the writer has done all he could to call the attention of the farmers to the principles of plant breeding and seed selection. Numerous

articles have been prepared for the press, thousands of circulars have been mailed, lectures have been delivered where time and opportunity permitted, and a plant breeders' association which consists of about 30 of our most enlightened agriculturists has been organized. In further encouragement of the staple industry my firm has provided at Hartsville good facilities for ginning and marketing staple cotton.

In consequence of such efforts most of the farmers in the Hartsville section (and many elsewhere) now understand that pure, well-bred seed are necessary for the production of the greatest yield and the longest staple, and that careful handling at every stage is necessary for best results.

I see no reason why the results accomplished in the Hartsville territory cannot be widely extended by similar efforts elsewhere.

At the last annual meeting of the Cotton Manufacturers' Association of South Carolina I presented an argument for the buying of all cottons strictly on staple, calling attention to the fact that short-staple varieties vary tremendously in length and quality, and yet in most of our cotton markets all sell at the same price. Some of these varieties average not over 3/8 inch in length, and others which are equally productive are about 1 1-16 inches. If all the cotton mills would refuse to buy cotton except on staple, would have the length of every bale purchased by them carefully determined before accepting it, and would discriminate in price against cotton of inferior staple, this in itself would very quickly drive out the shorter varieties, besides being of obvious benefit to the mills.

By referring to Bulletin No. 148 of the South Carolina Experiment Station, giving the results of their 1909 cotton variety tests, you will find two varieties are catalogued as below 3/8 inch average staple and five as below 1/2 inch average. Yet in this test of 31 varieties "Columbia," which they catalogue as 1 1/4 inches to 1 1/2 inches, stood fourth in actual yield of lint cotton, and "Hartsville" variety, which they call

1 1/4 inches to 1 1/2 inches, stood sixth. Both Columbia and Hartsville are pedigreed varieties descended from short-staple plants. It may be well to state that the 1910 and 1911 experiments at the South Carolina station proved that the high yield and good length of these varieties in the 1909 experiment were not accidental, as both cottons occupied very high positions in both respects during the succeeding two years.

If very high yield and very short staple were always correlated there would be some reason for using the very short varieties. My own experiments, however, and those of any experiment station which sets down the length of the varieties tested, prove this not to be true. In fact, my breeding work seems to show that the opposite is more often the case, as the progeny rows from my longest stapled plants are very often the best in actual yield.

The value of the plant breeder's work is no longer open to question. In almost every department of plant life to which he has devoted any effort the results have been prompt and valuable—often incalculably so. Many millions have already been added to the wealth of the United States by the plant breeder. Hundreds of the brightest minds of the country, many of them in the Bureau of Plant Industries here in Washington, are engaged, through plant breeding, in assisting nature to produce better and more bountiful harvests.

There is little reason to doubt, from the incalculable value of the work of the plant breeder in other departments and the considerable results already accomplished in cotton breeding, that by earnest co-operative effort every desirable feature of the cotton plant can be greatly improved to the immense benefit of the industry; and it is my hope that your association will have a prominent part in bringing our planters to a prompt realization of the vital relation that exists between plant breeding and the prosperity of both the cotton producer and the cotton spinner.

ILLUMINATING ENGINEERING CO-OPERATION.

By G. H. STICKNEY of the General Electric Co.

It is well within the memory of the present generation when artificial light was but little used in industries and all work ceased with the setting of the sun. In those days the open flame gas or kerosene lamp only were available, these being later followed by the so-called "2000 candle-power" open arc and 16 candle-power incandescent electric lamps and the incandescent mantle lamps. No effective auxiliaries were available, and no one realized the advantage to be gained by properly arranging and equipping the lighting units.

Times have changed with regard to the use of light. The last decade has seen a revolution in lighting units and methods. The gains in efficiency of light production have exceeded anything in other lines of development and surpassed the dreams of even the most imaginative. Improvements in methods of installation and equipment have followed rapidly, and this, with the lessened cost of light and realization of its value, has increased the popularity of artificial light until today its use is as widespread as successful activity.

With the large number of lighting units and devices now available and the realization of the economy to be effected by the proper selection and installation of units, the engineer responsible for a lighting installation is confronted with many complex and important problems. Not only must he secure effectiveness and economy, but his installation must conform with the rapidly-rising standard of lighting practice.

The advent of the Illuminating Engineering Society was coincident with the inception of this portentous movement. It was undoubtedly a result of the movement; on the other hand, it has been an important cause and guiding element in its activity. Inasmuch as light and illumination are closely associated with every form of human endeavor, the Illuminating Engineering Society finds that its field borders on that of nearly every industrial and civic organization.

Another happy circumstance has developed within the past few years: the commercial world has just learned the value of co-operation. Hence it is that the Illuminating Engineering Society has realized the common ground between it and other organizations, and has come to appreciate the great benefits which may be secured through mutual co-operation. To apply this idea, Dr. A. E. Kennelly, the 1911 president of the society, appointed a Committee on Reciprocal Relations with other societies. Dr. H. E. Ives of Cleveland is chairman, and the present speaker is one of the several members. Under the leadership of Dr. Ives this committee has prepared a tentative method of procedure, with a view to securing the results desired. A list of live, representative organizations with whom co-operation seemed desirable has been prepared, and advances made by various members of the committee. Without exception, our suggestions have been

received with cordial and prompt support.

Some of the first fruits are the joint meetings which the New York section has projected with the American Institute of Electrical Engineers and the Institute of Architects. The presence here today of the speaker is the result of your interest in the necessity for co-operation, and it is hoped that you will be so impressed with the advantages of this activity that we can establish a relationship that will be productive of great mutual help.

Now let us consider the existing conditions. You represent a large body of light-consumers desirous of obtaining effective, reliable and economical illumination for the purposes of your business; we represent a large body of those devoted to the production and utilization of light, who are interested in the advancement of the art of illumination and the extension of its usefulness. We need your practical experience in building up our knowledge of the art of illumination. You need our development and lighting experience for application to your particular problems. How can we help each other?

There seems to be three promising avenues for the advancement of intersociety co-operation, namely:

A—Formation of a joint committee on mill lighting practice.

B—Holding of joint meetings, and

C—Exchange of papers at conventions and meetings.

The adoption of one or more of these means of intersociety co-operation must necessarily have a broadening and educating effect in both organizations. Such papers and discussions representing, as they would, the different points of view, cannot fail to enlarge the viewpoint of the members.

For Augusta's Improvement.

[Special Cor. Manufacturers Record.]

Augusta, Ga., March 26.

Referring to the recent overflow of the Savannah River at Augusta, J. J. Farrell, secretary of the Chamber of Commerce, says:

"Look over the city thoroughly, and where the streets are paved you will see that the few inches of water that traversed them slipped off with no damage beyond leaving a deposit of mud that, while unpleasant, was not full of harm. We had a tremendous scare, but it is going to result in much good, inasmuch as we will soon have the money in hand to build a levee or do whatever the best engineering talent tells us will be best to keep out the waters of the Savannah. Within a month we will vote upon the question of issuing \$1,250,000 worth of bonds to build a levee, if that shall be recommended, or dam the stream or whatever shall be decided upon. Popular opinion leans toward a levee, though that is purely a point for the engineers to decide."

"As long as the river only overflowed once in 20 years, we were content to wait for it to come along about every two decades and do its little damage, but the last freshet, coming only four years after its predecessor, has determined Augustans to do something, and do it quick. It is not so much the actual harm done as much as it is the disturbance of business that we want to avoid. And we are going to avoid it. With the coming of the hydro-electric power to Augusta from the plant of the Georgia-Carolina Power Co., which will be started in a few days, this city faces a great era of development, and we are not going to allow a little water dampen our ardor, not if a few hundred thousands can keep it out."

Purification of Household Water.

By ERNEST McCULLOUGH C. E., Chicago, Ill.

The subject of pure water is one of the most live subjects now before the public. About a year ago the writer presented to the readers of the MANUFACTURERS RECORD the present status of the sewage problem, and there showed that the high degree of purification of sewage at one time attempted is a practical impossibility. It has been shown conclusively that no matter how carefully the sewage of towns and cities may be purified, there will be enough washings from hillsides and contributions from streams traversing farming districts which will render necessary the purification of water taken for domestic use from the streams into which the purified sewage may be discharged. The present tendency is now to render sewage inoffensive to sight and smell, depending upon the action of nitrifying and oxygenizing elements in the stream to further improve the liquid.

This puts it up to the users of all water to purify the water before use. The old idea was to purify the sewage and take chances on other pollution because of the expense of water purification. The modern idea is to purify the water if obtained from a questionable source, and the science has so far advanced that very bad water is now made potable. In some German rivers the water is offensive to all the senses on warm days, yet potable water is delivered to the people residing in communities along those streams, the source being the streams. In Chicago there was a stream known as "Bubbly Creek," because of the thick scum on the surface, which was constantly being broken up by the bubbles of gas arising from the purifying sewage in the bottom. It was so bad that the city erected a pumping works to flush out the intercepting sewer which emptied into Bubbly Creek, and the augmented volume of water thus sent down the stream made very little difference.

The Union Stockyards was unable to get enough water from the artesian wells drilled many years before, as these wells were giving out by reason of the great increase in the number of such wells in the small area. The city was unable to furnish more water to the stockyards district, and Bubbly Creek was turned to as a prospective source of supply. The Norwood Engineering Co. entered into a contract with the stockyards company to erect a water-purification plant on the bank of Bubbly Creek and guaranteed to convert the dilute sewage flowing therein into a potable water, at least as good as water drawn from any tap in the vicinity. The work was accomplished with ease, and this object-lesson in the United States has done much to make municipalities abandon expensive plans for an impossible purification of sewage, and look instead to the purification of the water supply, taking merely common-sense precautions that the sewage is not objectionable. We now read of sewage clarification where formerly it was sewage purification.

Water filters are of two kinds, sand being used as a filtering medium in each. The slow sand filter, or, as it is usually termed, the sand filter, is composed of large shallow beds of sand through which the water slowly percolates. The process of purification is almost wholly biological, a mat forming on top of the sand which harbors organisms that feed upon and destroy the harmful elements, usually other organisms, in the water. When the velocity of flow through the sand becomes

slow because the mat is clogged, the sand is carefully washed and some of the mat returned to the surface before the water is again passed through, this mat being like the yeast lump the old housewife used to place in the bag of flour to "grow." By replacing some of the mat the development of organic life is hastened so the filter quickly gets again into service.

The other kind of filter is termed a mechanical filter, and the rate of flow of water through the sand beds is very much higher than through the beds of the sand, or slow sand, filter. Owing to this the area of ground covered is also considerably less, being only a small fraction of the space occupied by the sand filter. The mechanical filter is essentially a huge sand washing machine. The water stands on the sand surface at a greater depth than in sand filters, and a coagulant is added to the water to form a gelatinous mass which fills the voids in the sand and thus supplies a finer filtering medium. The mechanical filter is an almost perfect strainer with no biological action, while the sand filter is not a strainer. The coagulant in the mechanical filter furnishes a filtering medium of such fine texture that infinitesimally small organisms are caught.

The sand filter is cleaned as often as necessary, the condition of the water governing this entirely. In some cases the beds are scraped once or twice each week, and occasionally only once in three months, the latter interval being exceptional. Mechanical filters are cleaned daily by reversing the flow of water, the wash water being introduced from the bottom and forced up through the sand, carrying the sediment from the surface into overflow gutters provided alongside each bed. Sulphate of alumina has been in common use as a coagulant for many years, with and without the addition of lime. Of late years iron has been used containing a small amount of copper as a germicide. Various substances have been experimented with from time to time, but the above-mentioned substances are most commonly used, as they are comparatively cheap and do good work.

In some waters there exist such large amounts of pathogenic organisms, organisms harmful to health, that some get through even the finest filtering substance and create epidemics. In such cases the water must be sterilized, and it was in the Bubbly Creek plant that the process was studied in the most thorough manner, since which time many experiments made in other places have resulted in the adoption of plants for sterilizing water in connection with filtration and also in the adoption of sterilization where filtration is not yet practiced. Where water in households was formerly boiled it is now common to sterilize the water with chloride of lime, that may be obtained of any druggist or grocer.

For communities a tank is provided in which hypochlorite of calcium is dissolved in water and fed by means of a small pipe into the main from the pumps. In the ordinary household the plant is more simple. This household method renders it unnecessary to boil suspected water and also makes the householder free from danger caused by the average household filter, which is often dangerous because not properly cleansed. The use of chloride of lime should be taught in the public schools so that people going away from home to the country will not longer be in danger of bringing home with them germs of ty-

phoid fever. This simple method of water purification was devised by Drs. Nasmith and Graham of the Provincial Board of Health of Ontario. It has been printed in circular form and distributed in mining and contractors' camps and through the country generally so all the people may know it.

A level teaspoon of chloride of lime should be rubbed in a teacup of water. This solution should be diluted with three cupfuls of water and bottled up. The solution should be prepared daily. The water to be used should be placed in earthenware jars preferably, and for every two gallons of water in a jar a teaspoonful of the solution should be poured. This will give from four-tenths to five-tenths parts of free chlorine to a million parts of water, and in 10 minutes will have destroyed all typhoid and dysentery producing organisms in the water. Moreover, in a very few minutes longer all traces of the chlorine will have disappeared, so the water will not taste of the solution.

Occasionally a taste may be noticed, but this depends upon the water. It does not harm, for the small amount of chlorine is a very small fraction of the amount given as a dose in cases of typhoid fever. It cannot possibly do any harm, and will certainly sterilize the water so that all danger is eliminated. The foregoing recipe should be carried by all campers and should be posted prominently in the offices of health officials and others, so that when an epidemic of typhoid is threatened the people may be advised to take means to protect themselves and families so long as the water supply is questionable.

Literary Notes.

The Kingdom of Dust. By J. Gordon Ogden, Ph.D. Published by Popular Mechanics Co., Chicago. Forty illustrations. Cloth bound. Price 50 cents.

In this day of vacuum cleaners, air-scrubbing apparatus, mechanical ventilation and other precautions against the incursions of dust and its formation, this little volume on the subject of dust is timely and instructive. It treats of cosmic dust and invisible dust forms, but a few practical chapters on the real dust of our every-day acquaintance are of a particularly valuable character from the standpoint of sanitarians and for the information of those who are necessarily thrown in contact with conditions in which harmful dust largely prevails. It is one of the Popular Mechanics handbooks, written to supply a growing demand for high-class and practical textbooks suitable for home reading as well as for class use.

Building Stones and Clays: Their Origin, Characters and Examination. By Edwin C. Eckel, C.E., associate member of the American Society of Civil Engineers; member of the Society of Chemical Industry and fellow of the Geological Society of America. Publishers, John Wiley & Sons, New York. Price \$3.

The increasing importance of the engineering applications of geological information has introduced into the professional field a special phase of geology which may be appropriately termed engineering geology. The preparation of this book conforms to this idea, and it should be of particular value to constructing and industrial engineers, as well as of general interest to the student of geology. The subjects of the origin and the structure of granites and other acid rocks, sandstones, marbles, limestones, clays, slates, shales, etc., are comprehensively treated, and methods of testing and of making labo-

ratory and other examinations are carefully outlined.

The author's valuable work, in connection with the United States Geological Survey, is reflected in frequent references to statistical information, to geographical data and to physical properties which such work has made him familiar with and which give the book a particularly authoritative value.

The engineering applications of geology are briefly stated in the opening chapter. Subsequent chapters treat of the formations, kinds and qualities of the various rocks and clays and of the conditions under which they are found; also their composition, relative values, properties, etc. Extensive tables of analyses are given and many illustrations of geological formations are included. Extensive lists of references are made on each subject, so that the study of this book may be supplemented by extended reading of the books of other authors on each specific subject.

Applied Methods of Scientific Management. By Frederic A. Parkhurst, M. E. Publishers, John Wiley & Sons, New York. Price \$2.

One of the results of the attention which has been given to the literature and discussion of scientific management is a demand for information regarding practical application of these principles in established industrial plants. Such information is always interesting, and as these applications have not in all cases proven successful or satisfactory, those cases in which scientific management has proven both successful and satisfactory are valuable as matters of record. By comparison and elimination the causes of failure or success may be deduced. From a study of such cases it is apparent that the human equation is one of the important elements.

The whole treatment of the subject by the author of this book is based on practical application of scientific management in the Ferracute Machine Co. of Bridgeport, N. J., where a comparison of results of the old and new methods shows the complete success of the application of the methods of scientific management as outlined in this book. The results show that some jobs previously done by low-priced men are now done by higher-priced men in less time, more satisfactorily and at less cost. All employees have developed an average increase of about 11 per cent. in their wages in the past two years, and with an increased profit to the company. The psychological or human element of the problem has been given first consideration and harmony and co-operation between employer and employee have been the aim, with resulting mutual advantages.

The State Geological Survey of Mississippi, E. N. Lowe, director, has published a bulletin giving the results of a preliminary examination of forest conditions in the State, and also a paper by Mr. Lowe on the results of a study of erosion of lands in the State.

K. T. Crawley, industrial agent of the Chesapeake & Ohio Railway Co., is authority for the statement that in the past three years more than 1000 families have been settled on lands along the line of the railway in Virginia.

The executive committee of the East Texas Development Association, Robert S. Bolton of Jacksonville, secretary, is to meet at Jacksonville on May 6 to perfect plans made by the association at its annual meeting last month.

The next annual convention of the Interstate Cottonseed Crushers' Association will be held at New Orleans May 21 to 23.

GOOD ROADS

WEEK'S HIGHWAY RECORD.

Progress in Southern Road and Street Improvement.

[Full details of highway undertakings are given in the Construction Department.]

Bonds Voted.

Corpus Christi, Tex.—City voted \$150,000 bond issue for street paving.

Greenfield, Mo.—Dade county voted \$47,000 bond issue for road improvements.

Mt. Vernon, Mo.—Lawrence county voted \$50,000 bond issue for road construction.

Bonds to Be Voted.

Buford, Ga.—City votes April 13 on \$10,000 bond issue for paving.

Clarksdale, Miss.—Coahoma county will issue \$50,000 bond for road and bridge construction.

Culpeper, Va.—Culpeper county will vote April 20 on \$50,000 bond issue for macadam roads.

Greensboro, N. C.—City will vote on \$80,000 bond issue for street paving.

Sedalia, Mo.—Sedalia special road district votes April 20 on \$200,000 bond issue to construct 16 roads; rock or gravel; 52 miles.

Taylor, Tex.—City will vote April 30 on \$25,000 bond issue for paving main streets.

Contracts Awarded.

Birmingham, Ala.—City awarded contracts for 50,000 square yards street paving; cost about \$250,000.

Greenville, S. C.—City awarded contract for paving walk through City Park on North Main street; 1200 feet long and 6 feet wide.

Memphis, Tenn.—City awarded contract at \$7121.72 to pave 4th street.

Springfield, Tenn.—Robertson county awarded contract for 150 miles of limestone macadam roads.

Contracts to Be Awarded.

Bainbridge, Ga.—City will construct 22,000 square yards street paving with necessary drainage and granite curb; vitrified brick, wood block, bitulithic, granitoid and asphalt considered.

Brunswick, Ga.—City receives bids until April 15 for grading and paving four streets with vitrified brick; 11,000 square yards paving and 1700 linear feet curbing.

Camden, Ala.—Wilcox county postponed date of opening bids from March 26 to April 30 for grading, draining and surfacing with gravel or sandstone four miles of road; cost \$8000.

Charlotte, Tenn.—Dickson County Turnpike Co. will construct eight miles of road.

Easton, Md.—City will pave streets; construct three to five miles of pavement, including curbing and gutters; amount available \$90,000 to \$95,000.

Helena, Ark.—Paving district No. 9 will pave 10,000 square yards with five-inch concrete foundation, place 6400 linear feet curb and gutter, grade 1000 cubic yards, etc.

Jackson, Ky.—Town receives bids until April 20 for paving certain streets with macadam or telford; about 13,000 square yards.

Knoxville, Tenn.—Bids invited on construction of 500 square yards concrete sidewalks and 1100 feet concrete curbing in Maplehurst Park.

Louisville, Ky.—City opens bids April 12 for vitrified block paving; require 710,000 blocks; estimated cost \$52,000.

Lynchburg, Va.—City receives bids until April 13 for paving certain streets; 30,000 cubic yards excavating, 21,000

linear feet concrete curb, 37,000 square yards bituminous macadam.

Norfolk, Va.—City receives bids until April 8 for laying 1700 square yards asphalt paving.

Richmond, Va.—City approved resolution to pave Grove avenue with asphalt blocks; appropriation \$25,000.

Sweetwater, Tex.—City receives bids until April 22 for constructing 66,000 square yards of water-bound macadam and 4000 square yards of asphalt macadam street paving.

Greenville Streets.

Board of Trade,
Greenville, S. C., April 1.

Editor Manufacturers Record:

A committee of the City Council has been appointed to secure signatures of property-owners to a petition for a special election upon the question of issuing additional bonds amounting to \$150,000, to be expended as follows: Street paving, \$100,000; cement sidewalks, \$15,000; sewerage improvements, \$35,000. The Council has authorized the spending of \$15,000 at once in paving Augusta street from the Greenville & Columbia Railway station to the city limits. When completed this will give about two and one-half miles of paving in this one direction. For every dollar the city spends in this work the property-owners on the streets affected will have to spend an equal amount. There will, therefore, be a fund of \$200,000 available for street paving purposes and \$30,000 for sidewalks. In all probability actual work will begin within the next three months.

By the time these improvements are completed Greenville will have 10 miles of paved streets, 32 to 35 miles of sewers and 15 to 18 miles of cement and curbed sidewalks. A total of \$685,000 will have been spent on these improvements since September, 1910.

ALBERT S. JOHNSTONE, Secretary.

An Arkansas County's Roads.

Under the administration of County Judge Joseph Asher, \$138,000 have been spent in the past year upon roads, culverts and bridges in Pulaski county, Arkansas, outside the limits of Little Rock. Within the limits of Little Rock \$132,500 were spent upon the streets. According to a bulletin of the Little Rock Board of Trade, the amount of work contracted for but not completed in the county is \$28,000, and the amount to be contracted for, representing 6½ miles of roads, is \$40,000.

Crest of Blue Ridge Highway.

At the spring convention of the Southern Appalachian Good Roads Association last week at Spartanburg, S. C., President Joseph Hyde Pratt reported on the proposed highway on the crest of the Blue Ridge from Marion, Va., to Tallulah Falls, Ga., in which there will be a continuous stretch of 112 miles at an elevation of from 3000 to 5500 feet above sea level.

Fiber and Spinning Machinery.

O. L. Hardgrave, consular agent, Ruan, Honduras, writes to the MANUFACTURERS RECORD:

"A company has been organized here of \$150,000 for the purpose of cleaning or extracting the coir fiber from coconut husk. They want to handle 20,000 nuts in 10 hours, and want a machine to remove the husk from the nuts and a machine to clean the fiber from the husk; also want spinning machines to spin the fiber into yarn. Can you give me the names and addresses of the makers of such machines? The officers of the company prefer to buy American make of machines if they can be had."

RAILROADS

[A complete record of all new railroad building in the South will be found in the Construction Department.]

A \$5,000,000 CONTRACT.

English Syndicate Building Railroad from San Antonio to the Gulf.

Contract has been let at San Antonio, Tex., for the construction of the San Antonio, Rockport & Mexican Railway by Robert Pattinson of London, representing the European Contract Syndicate, to the Shattuck-Endinger Company of Los Angeles and San Francisco, Cal., and it is estimated that not less than \$5,000,000 will be expended under the agreement. Work is to begin immediately between Crowther, about 50 miles south of San Antonio, and Rockport, 100 miles. As for the construction between San Antonio and Crowther, it is rumored that the Artesian Belt Railroad, running from Macdonna, near San Antonio, to New Artesia, not far from Crowther, and which was purchased by H. E. Hildebrand of San Antonio from the Simmons estate several days ago for \$200,000, will be made part of the line. If that is not correct, the company will have to build its own line between the two points. The contract covers the construction of the proposed docks at Harbor Island. The work is to be completed within 18 months. F. S. Endinger represented the contractor in closing the deal.

The railroad will be built in the most substantial manner. It will, of course, be standard gauge, but the track will be laid with 90-pound rails and ballasted with stone. Reinforced concrete will be used for bridges and culverts. The engineering will also be done by the contracting firm. It is expected that the work will be under full headway by May 1, for although it will be started immediately, it will require two or three weeks for the contractor to assemble machinery and men in altogether sufficient numbers for the job.

R. R. Russell is president and A. L. Matlock vice-president of the railway company. Both are residents of San Antonio. O. R. Mounsey of London is chairman of the European Contract Syndicate.

This is the second railroad company to begin construction recently between San Antonio and the Gulf of Mexico, the other being the San Antonio, Uvalde & Gulf Railway, of which J. E. Franklin of St. Louis is president, and which has offices in the Gibbs Building at San Antonio, with Vice-President M. E. Leming in charge of construction.

A TENNESSEE INTERURBAN.

Murfreesboro Electric Railway Co. Chartered for a 55-Mile Line.

A charter has been filed in Tennessee for the Murfreesboro Electric Railway Co. J. L. Parkes, its local representative at Murfreesboro, Tenn., says that the proposed line is from Nashville via Murfreesboro to Woodbury, Tenn., about 55 miles. The route lies through country which ranges in character from nearly level to hilly. It is not decided when bids for construction will be received. The directors are R. T. Wilson, R. L. Burch, Joseph Frank and T. G. Tinsley of Nashville, and Mr. Parkes. Mr. Wilson is president.

A press report from Nashville announcing the filing of the charter says that the capital is \$50,000, and that, in addition to the three places named, the line will connect Clarksville, Springfield, Cornersville and Lewisburg, Tenn. It would seem, however, that the line from Nashville, Murfreesboro and Woodbury will be first built. If all is done, the road will have more than 100 miles of track. Subscrip-

tions to the stock are being solicited along the route. Although not so announced, it is surmised that the company will obtain electricity from the plants to be established at Great Falls, Hale's Bar and Ocoee.

DEAL AT SOMERSET, KY.

Electric Railway and Other Public Utilities Bought by Syndicate.

A report from Louisville says that a deal has been closed for the public utilities at Somerset, Ky., including street railway, water-works and electric-light plant, and that Martin J. Insull of New Albany, Ind., has been elected president of a new company which will operate them. It is surmised that the purchasers are associated with H. M. Byllesby & Co. of Chicago, who are about closing a deal for the Nashville Railway & Light Co., and who, it is further stated, are pushing work on a hydro-electric plant at Cumberland Falls, Ky. Other purchases of public utilities are anticipated.

Another report says that the closing of the deal was announced by Mr. Insull, who is president of the Louisville & Northern Railway & Lighting Co., and that associated with him are Henry Klauber, Bernard Flexner and Robert G. Gordon of Louisville, Ky., and Samuel Insull of Chicago.

The Somerset Water, Light & Traction Co. is the name of the corporation that has controlled the utilities at Somerset. There are three miles of standard-gauge railway and three cars. In addition to the railway the company operates an electric-light plant, the water-works and pumping station, an ice plant, etc. Capital stock is \$300,000 and funded debt \$300,000. W. G. Hunter is president; O. H. Waddle, vice-president; A. M. Stork, secretary and treasurer, and W. G. Hunter, Jr., general manager.

AFTER KENTUCKY COAL.

Norfolk & Western Incorporates for a Line on Pond Creek in Pike County.

The Norfolk & Western Railway is preparing to build a new line from Williamson, W. Va., down into Pike county, Kentucky, which is just across the river, for the purpose of reaching coal lands. The line from its beginning will run up Pond Creek, and it appears that only 11 miles will now be constructed, although it is said that it will ultimately reach the line of the Chesapeake & Ohio Railway at or near Elkhorn City, Ky. Incorporation articles have been filed at Frankfort, Ky., for the line, which, it is stated, will have headquarters at Ashland, Ky. The name is Williamson & Pond Creek Railroad Co., and L. E. Johnson, president of the Norfolk & Western, heads the incorporators, the others including Joseph I. Doran of Philadelphia, general counsel; Wm. G. McDowell of Philadelphia, vice-president, and W. A. Ginn of Ashland, attorney. The directors also include other officers of the Norfolk & Western.

\$1,000,000 TO BE SPENT.

New Orleans Terminal Co. Appropriates Funds for General Improvements.

The New Orleans Terminal Co., which is controlled by the Southern Railway and the Frisco system, has, according to official announcement, appropriated \$1,000,000 for improvements. A. D. Lightner, general agent of the Frisco, is quoted saying that the money will be used for general betterments. These will include the completion of the new slips at Chalmette and the old wharf there will be reconstructed with timbers having a preservative treatment. Furthermore, a grain elevator of

500,000 bushels capacity will be erected and equipped with carriers and conveyors. At the Basin street terminals in the city warehouses and cotton sheds will be built and team tracks laid, including ample driveways and approaches. Extensive improvements will also be made to the round-houses, including the addition of machinery. Details of the work are yet to be decided at a meeting of the officials of the two roads interested.

MEMPHIS UNION STATION.

Large New Terminal Now in Use by Six Railroad Companies.

The new union station at Memphis, Tenn., according to a report from there, has been opened and put in service. The total cost of the improvement is estimated at \$3,000,000. The lines using it are the Southern Railway, the Louisville & Nashville Railroad, the Nashville, Chattanooga & St. Louis Railway, the St. Louis, Iron Mountain & Southern Railroad, the St. Louis Southwestern Railway and the Memphis Union Railway. It is located on Calhoun near Main street.

The Illinois Central Railway also proposes to erect a union station at Memphis to be used also by the Rock Island and the Frisco system.

New Equipment, Rails, Etc.

President T. J. Freeman of the Texas Pacific Railway is quoted saying that he has completed purchase of 16 chair cars and coaches, 7 baggage and express cars and 20 locomotives, and for the International & Great Northern, of which he is also president, 13 chair cars and coaches, 10 locomotives and 75 ballast cars. Delivery to be made from June 1 to July 5. Total cost about \$1,200,000. Names of builders not given.

The Atlantic Coast Line is reported about to buy 1900 box cars and 100 flat cars, besides some passenger cars and some cabooses. It has ordered already 12 Pacific type locomotives, 8 10-wheel locomotives and 15 6-wheel switching locomotives from the Baldwin Works, Philadelphia.

The International & Great Northern Railroad, according to a market report, has ordered 12,000 tons of open-hearth steel rails from the Tennessee Coal, Iron & Railroad Co., Birmingham.

The Atlantic Coast Line is reported in the market for 1000 tons of bridge steel.

The Seaboard Air Line is reported getting prices on 1500 cars.

The Coal & Coke Railway contemplates buying four consolidation locomotives.

The Santa Fe has ordered 15 smoking cars, 10 combination passenger and mail cars, 10 chair cars, 1 combination passenger and baggage car and 14 three-compartment cars for colored passengers from the Pullman Company, Chicago.

The Western Maryland, it is reported, will purchase 500 more cars.

The Rock Island lines have ordered two gas electric motor cars from the General Electric Co., Schenectady, N. Y., and six dining cars from the Pullman Company, Chicago.

The Corpus Christi Street & Interurban Railway, Corpus Christi, Tex., is reported in the market for two closed cars.

The Virginian Railway has ordered another Mikado type locomotive from the Baldwin Works. This makes 10 recently ordered from the same builder.

The Galveston-Houston Interurban Electric Railway has ordered four 53-foot interurban trail cars from the St. Louis (Mo.) Car Co.

The Rock Island lines are reported to have ordered 23,000 tons of rails from the Illinois Steel Co., Chicago, of which 10,000 tons will be open hearth of 90 pounds weight per yard. It has also ordered

2000 tons of open-hearth rails of 100 pounds weight, of which the Lackawanna Steel Co. will roll 1000 tons and the Pennsylvania and the Cambria steel companies 500 tons each.

The Pennsylvania Railroad has ordered 20 passenger cars from the American Car & Foundry Co., St. Louis; 20 from the Standard Steel Car Co., Pittsburgh, and 27 from the Pressed Steel Car Co., Pittsburgh.

The Washington (D. C.) Railway & Electric Co. has ordered 50 open car bodies (14 benches each) from the J. G. Brill Company, Philadelphia.

The Norfolk & Western Railway, says a report from New York, has ordered 25 Mallet locomotives from the American Locomotive Co., this being in addition to 15 locomotives ordered in December.

READY TO BUILD.

Meridian & Memphis Railway Will Let Contract for 30 Miles.

The Meridian & Memphis Railway Co., Meridian, Miss., announces that it is ready to receive bids for 30 miles of road-bed construction from Meridian to Union, Miss. Profiles and specifications can be seen at the company's office in Meridian. Financial arrangements are all completed and the work is to begin on or before May 1.

Thirty miles of 60-pound relaying rails are wanted.

Western Maryland's Extension.

The Western Maryland Railway's extension from Cumberland to Connellsville, 87 miles, is expected to be in shape for the running of an official inspection train over its entire length by April 15. It will, however, probably be at least a month later before a regular freight schedule is established, and after that a passenger schedule.

It is the intention of the railroad company to establish a first-class passenger train service between Baltimore and Pittsburgh, with through sleeping cars to other Western points in connection with the New York Central lines, which begin at Connellsville. The route through the Alleghenies between Cumberland and Meyersdale traverses a beautiful mountain country, with easy grades especially advantageous for freight traffic.

Bismarck to Sunlight.

Edward T. Eversole, attorney, Potosi, Mo., says that the Bismarck, Bellevue Valley & Western Railway Co. proposes to build a line 20 miles long from Bismarck to Sunlight, Mo., via Caledonia and Belgrade, which will include two bridges of one span each over Big River and Cedar Creek, respectively. E. E. Evans, 924 Chemical Building, St. Louis, is president. Route lies through rolling country. Connection will be made with the St. Louis, Iron Mountain & Southern Railroad (Missouri Pacific system) at Bismarck, and probably with a branch of the Frisco at Bixby.

Kentucky Central Electric.

The Kentucky Central Electric Railway Co. has obtained a charter in Delaware; authorized capital \$1,000,000. Incorporators are S. E. Roberson, M. L. Rogers and H. W. Davis of Wilmington, Del., but it is understood that further information about the enterprise may be obtained from the Farmers' National Bank of Glasgow, Ky., of which George R. Lewis is president, V. H. Baird vice-president and P. W. Holman cashier.

The Clinchfield Extension.

A report from New York says that the Carolina, Clinchfield & Ohio Railway will soon build its long contemplated extension from near Dante, Va., to Elkhorn City,

Ky., about 35 miles, at a cost of about \$4,000,000, and that financial arrangements have been made. Engineers have not yet decided definitely upon the route. Heavy work is necessary.

Announcement is made of the resignation of President A. A. Allen of the Missouri, Kansas & Texas Railway, one of the Hawley properties, and the election of Charles E. Schaff of Chicago as his successor. Mr. Allen resigned on account of the condition of his health, but will continue to maintain a connection with the company as a consulting director. Mr. Schaff is now vice-president of the Lake Shore & Michigan Southern Railway.

MINING

To Utilize Georgia Halloysite.

Messrs. Emory & Eisenbrey, Harrison Building, Philadelphia, write to the MANUFACTURERS RECORD as follows:

"The North American Chemical Co. will break ground about May 1 at Urbana, O., to erect a plant for the manufacture of alum from halloysite, of which ore they have extensive deposits in the vicinity of Rome, Ga. The plant will be one and two story fireproof construction, designed to handle 20 tons of ore per day, and will cost about \$25,000. Plans are being prepared by Emory & Eisenbrey, and they will receive bids for the construction of buildings and furnishing of equipment at an early date."

The chemical company, H. H. Shackleton in charge, can be addressed at Rome, Ga.

To Develop Virginia Pyrites.

The Old Dominion Sulphur Co. has been incorporated with \$500,000 capital stock and the following officers: President, Albert Fogg of Camden, N. J.; vice-president, C. C. Walton of Norfolk; secretary-treasurer, Walter Sparkling of Petersburg. This company will develop pyrites deposits in Stafford county, about 10½ miles from Fredericksburg, Va. Its treasurer wires the MANUFACTURERS RECORD as follows:

"Mining sulphur pyrites; 200-ton plant complete; 300 acres include Austin run."

The Lead Production in 1911.

The production of primary refined lead in the United States in 1911 was 486,975 tons of 2000 pounds, an increase of 16,585 tons over the production in 1910, according to a report by C. E. Cesiebanthal of the United States Geological Survey. Of the total production, 406,148 tons were from domestic ore, and of that 182,207 tons were produced in Missouri, nearly 45 per cent. of the total; 1925 tons in Oklahoma, 400 tons in Virginia, 57 tons in Texas and 15 tons in Arkansas—a total of 184,604 tons in the South.

Daily Output of 500 Tons.

The Dean Coal Co., Knoxville, Tenn., has been incorporated with \$25,000 capital stock to develop 100 acres of land near Barboursville, Ky., and proposes a daily output of 500 tons of coal, the equipment for which is now being installed. Messrs. H. W. Smith, H. W. Sanford, A. B. Day, Michael Campbell, M. R. Campbell and M. R. Peck, all of Knoxville, are the incorporators.

A \$100,000 Mining Company.

The American Mining & Exploration Corporation, Richmond, Va., has been chartered with \$100,000 capital stock and the following officers: President, Frank Jay Gould, 165 Broadway, New York; vice-president, Henry W. Anderson, Richmond; secretary, Arthur Kelley, New York.

TEXTILES

[A complete record of new textile enterprises in the South will be found in the Construction Department.]

Correspondence relating to textile matters, especially to the cotton-mill interests of the South, and items of news about new mills or enlargements, special contracts for goods, market conditions, etc., are invited by the MANUFACTURERS RECORD. We shall be glad to have such matters at all times, and also to have any general discussion relating to cotton matters.

SOUTHERN TEXTILE PROGRESS.

Investment of About \$2,200,000 for First Quarter of 1912.

During the first quarter of 1912 there was considerable more activity in adding to Southern spindleage than during any quarter period of 1911. This increasing activity resulted in announcements of plans for the installation of spindles and looms involving an investment of approximately \$2,200,000, of which amount about \$1,500,000 was for additions to established plants. The new companies were three in number, their equipments to be 25,300

spindles and 450 looms, while the old organizations adding to their machinery were 11 in number, announcing plans for adding 62,112 spindles and 685 looms. From this statement it is evident that nearly all the increases of milling equipment in the cotton-growing States are undertaken by the experienced cotton manufacturers of that section, this having been the case for years past.

Some of the equipments considered in the above figures have been installed, many more have been contracted for, and but a few remain to be arranged for. Nearly all the building construction required for the additions noted has been begun, and will be completed in due time. The largest plant reported for the period embracing January, February and March was one of 15,000 spindles and 450 looms in North Carolina, while the largest addition to a mill was one of 20,000 spindles and 560 looms in South Carolina. In most cases the various companies are merely adding to their facilities in order to meet properly the increasing demand for the yarns and cloth they manufacture.

The quarter's reports are listed as follows:

Georgia.		Spindles.	Looms.
Name.	Location.		
*Berryton Mills.....	Berryton.....	3,600	....
*La Grange Mills.....	La Grange.....	5,000	....
*Macintosh Mills.....	Newnan.....	3,200	....
		11,800	....
North Carolina.			
*Wiscasset Mills Co.....	Albemarle.....	5,000	....
*Bladenboro Cotton Mills.....	Bladenboro.....	8,000	....
*Granite Falls Manufacturing Co.....	Granite Falls.....	1,000	....
*Ivey Mill Co.....	Hickory.....	7,800	....
*Cannon Manufacturing Co.....	Kannapolis.....	5,000	....
*Rolla Manufacturing Co.....	Lincolnton.....	2,300	....
*E. A. Smith Manufacturing Co.....	Rhodhiss.....	15,000	450
*Hannah Pickett Mills.....	Rockingham.....	900	....
		45,140	450
South Carolina.			
*Glenwood Cotton Mills.....	Easley.....	20,000	560
*Maplecroft Mills.....	Liberty.....	3,072	....
*Highland Park Manufacturing Co.....	Rock Hill.....	8,000	125
		31,072	685
Total for first quarter of 1912.....		87,412	1135

*Established mills increasing.

Capital Cotton Co.

Referring to last week's report that he has leased the Glasgow Mills of Hillsdale, Md., Otto Goetze, of the Otto Goetze Company, manufacturer and converter of cotton goods, 109 Worth street, New York, writes to the MANUFACTURERS RECORD as follows:

"I have been president and treasurer of the Glasgow Mills for many years. I leased the Ashland Mill at Hillsdale three years ago, and have been running it as a manufacturer of dress goods. In addition I have leased from the Ashland Manufacturing Co. all its holdings in Hillsdale, including mill buildings, dwellings, water rights and machinery, with the exception of the plant I have been running, above referred to. The mill now leased is manufacturing cotton duck, and was run heretofore under the name of the Ashland Manufacturing Co. The lease now consummated with the Ashland Manufacturing Co. I have turned over to a new corporation, the Capital Cotton Co. I am president and treasurer of this corporation, while E. S. Boteler of Wellington, Sears & Co., New York, is vice-president, secretary and general manager. The product of the Capital Cotton Co. is being sold by Wellington, Sears & Co., New York and Boston. The two companies, Glasgow Mills and Capital Cotton Co., have no connection, excepting that I am interested in both, and they are located in the same village."

Glenwood Mill No. 2.

The Glenwood Cotton Mills, Easley, S. C., has awarded contract to C. Frank Grandy, Greenville, S. C., to erect building for the company's No. 2 mill, recently announced. This building will be 105x342 feet and three stories high, to be equipped with 20,000 spindles and 560 looms for

manufacturing 40-inch cotton cloth. Bricks (more than 1,000,000) have been ordered for the building, and the Glenwood company has contracted with the Wisconsin Engine Co. of Corliss for its engines, and with the Babcock & Wilcox Company of New York for its boilers. J. E. Sirrine of Greenville is architect-engineer for the mill company, whose president recently advised the MANUFACTURERS RECORD of the plans for this additional mill, the cost of which will be about \$400,000.

C. W. Post's Cotton Factory.

Referring to plans for the Post City cotton factory of C. W. Post of Battle Creek, H. W. Fairbanks of Post City, Tex., manager in charge for Mr. Post, writes to the MANUFACTURERS RECORD as follows:

"More or less changes have been advisable. The size of the main building is approximately 520 feet long by 125 feet wide, one story; all reinforced concrete construction; a contract for this building has been let, though we do not care to make public the amount at present. There will be 10,080 spindles and 180 Stafford looms, suitable for wide sheetings. We anticipate building a bleaching plant and an electrical power plant, the details of which have not been fully settled upon."

Durham Hosiery Mills.

Referring to plans for a large increase of capitalization and for improvements to four mills, the Durham (N. C.) Hosiery Mills wires the MANUFACTURERS RECORD as follows:

"Meeting of our stockholders is called for April 8 to vote on increasing common stock \$250,000 (now \$850,000) and increasing preferred stock \$500,000 (now \$150,000). Improvements will be made at once to our mills Nos. 1, 3, 4 and 5."

These improvements will include the

following expenditures: \$70,000 at Durham; \$60,000 at High Point; \$60,000 at Chapel Hill; \$10,000 at Goldsboro.

Marion Manufacturing Co.

The Marion (N. C.) Manufacturing Co. will erect three-story 100x132-foot additional brick building costing from \$25,000 to \$30,000 and install 15,000 spindles, with 300 looms and accompanying machinery costing from \$150,000 to \$200,000. Building bids will be opened at once and construction begun soon. Machinery contracts have been closed except as to low-pressure engine, boilers, belting and mill supplies, on which the company wants prices. J. E. Sirrine of Greenville, S. C., is the architect-engineer in charge.

The Cotton Movement.

In his report for March 20 Col. Henry G. Hester, secretary of the New Orleans Cotton Exchange, shows that the amount of cotton brought into sight during 211 days of the present season was 13,951,681 bales, an increase over the same period last year of 3,069,118. The exports were 8,963,331 bales, an increase of 2,365,225 bales. The takings were, by Northern spinners, 1,914,275 bales, an increase of 101,221 bales, and by Southern spinners 1,947,677 bales, an increase of 214,363 bales.

To Manufacture Carpets.

H. M. Shaw, Oxford, N. C., contemplates installing machinery to manufacture carpets for buggy bottoms. He has hydro-electric power, and wants data and prices on the necessary carpet machinery.

Textile Notes.

The Davis Hosiery Mills of Chattanooga has increased capital stock from \$250,000 to \$500,000.

It is reported that the Harborough Manufacturing Co., Bessemer City, N. C., will build a large cotton mill.

The Highland Park Manufacturing Co., Charlotte, N. C., is reported as to build a 100-foot extension to its mill and add 7000 spindles.

The L. Banks Holt Manufacturing Co., Graham, N. C., is reported as planning important improvements to its carding and spinning departments.

The Darlington (S. C.) Manufacturing Co. is reported as contemplating the installation of automatic looms in place of its present old type looms. It has about 1500 looms.

Charles W. Johnson, president of the Highland Park Manufacturing Co., Charlotte, N. C., will build a 5000-spindle mill, but has not finally decided whether to manufacture fine or coarse yarns.

The Middleburg Mills, Batesburg, S. C., has awarded contracts, it is reported, for increasing equipment 50 per cent. This company is operating 9728 spindles and 310 looms on shirting and ticking production.

The Bibb Manufacturing Co., Macon, will erect an additional building, four stories high, 100x212 feet, costing \$50,000, at its Columbus plant. This addition will provide space for machinery to weave sea island cotton yarn into cloth. It is reported that the machinery contracts have been awarded.

The Harriman-Riverside Woolen Mills, Harriman, Tenn., referred to last week, has awarded contract to George W. Hood, Harriman, to repair present building and erect additional one-story 38x82-foot structure, the cost to be \$2500. The company is also adding a 20x38-foot boiler-room and a 16x30-foot washroom. It has 648 spindles, 36 looms, etc.

LUMBER

[A complete record of new mills and building operations in the South will be found in the Construction Department.]

For Woodworking Plants.

Board of Trade,
Hawthorne, Fla., March 29.

Editor *Manufacturers Record*:

We have an excellent opening for a mill for the manufacture of boxes and crates for shipping oranges, grape fruit, peaches, strawberries, cantaloupes and all kinds of vegetables. A shingle factory and planing mill would find a hearty welcome here also. We have an abundance of timber right here for above purposes, and an unusually convenient site for such a mill or mills right at the crossing of the Seaboard Air Line and the Atlantic Coast Line roads, about 100 yards from where our union depot will be built, and very near Hawthorne ice and cold-storage plant, which is now under construction and will be in operation in the near future.

LEE UMBERGER, Asst. Secy.

St. Bernard Cypress Co., Ltd.

The St. Bernard Cypress Co., Ltd., Arabi, La., writes to the MANUFACTURERS RECORD that it "has bought out the plant and timber of the Chalmette Cypress Co. and proposes operating same continuously. The St. Bernard company has assets of \$500,000 and our output has been sold to the Louisiana Red Cypress Co. of New Orleans, and a steady run of the mill is assured."

Big Louisiana Timber Purchase.

The Singer Manufacturing Co., New York, is reported to have purchased more than 48,000 acres of Madison parish (Louisiana) timber land, at more than \$850,000, for future development. It is said the timber includes gum, oak, elm, ash and cypress, which the company will utilize for manufacturing sewing machines and furniture.

A \$500,000 Company.

The Ocmulgee River Lumber Co., Lumberton, Ga., has been chartered with \$500,000 capital stock by Cassius F. Smith, John J. Joice and John Knox.

Machinery Wanted for Colombia.

G. David Ricaurte, Pasto-Narino, Colombia, South America, writes to the MANUFACTURERS RECORD:

"At present we have calls for the following, and would like to see catalogues and prices: Equipments and machinery for making mineral waters of all kinds, carbonators, bottling machinery, siphons, containers, retorts, salts, corks, tanks, filters and other necessary appliances and accessories. I want printing presses, type, paper, ink, pressboard, rollers and machinery of all kinds for printing house; electrical appliances of all kinds, whole machines, parts and accessories for lighting houses and streets, automobiles, power, etc.; also insulators and accessories, wires, cables, lamps, etc.; telegraph and telephone supplies of all kinds, batteries, accumulators, etc.; moving-picture machines, etc.; machines for making cigarettes, machines for making matches; apparatus for making candy, bon-bons, cakes, etc."

Hardware, Iron, Steel, Etc.

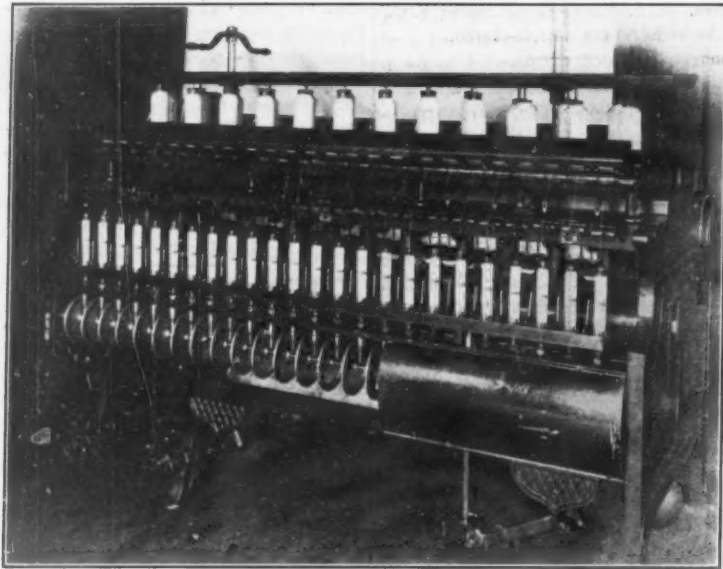
Herman Dullere, Saventhem, Belgium, writes to the MANUFACTURERS RECORD:

"I want to operate, if possible, on commission of 10 per cent., as agent for the sale of hardware, small tools for all kinds of trades, skins (dried or otherwise), iron, steel, galvanized wire, brass wire, etc., for some of your merchants directly or for their agents."

MECHANICAL

W. T. Noah's Patent Spinning Frame.

The accompanying illustration shows a new form of spinning frame in which the spindles are driven by friction plates, the invention of W. T. Noah, secretary and treasurer of the Swannie-Noah Hosiery Manufacturing Co., Elon College, N. C. This machine is in actual operation at this company's mill. Among the advantages claimed for the friction drive are that a positive tension and a positive speed are obtained, in consequence of



W. T. NOAH'S SPINNING FRAME, FRICTION-DRIVEN SPINDLES.

which soft twisted yarns and waste are eliminated; a great saving in time, due to the fact that each spindle is operated by its own plate; the cost of material for bands and the expense of making these bands are eliminated; the friction plates may be cased up, making them dustproof, thus saving the labor of cleaning; a considerable saving of floor space is effected. With a double creel it is possible to build a machine as narrow as 28 inches, or even less. It is stated that practical mill men and manufacturers are quickly convinced of the merits of this machine when it is seen in operation. It is claimed that the quality of yarn turned out by this machine is high, owing to the fact that the twist

at Elon College, and any other information regarding the friction-driven spindle-spinning frame will be given by Mr. Noah, either in person or by correspondence.

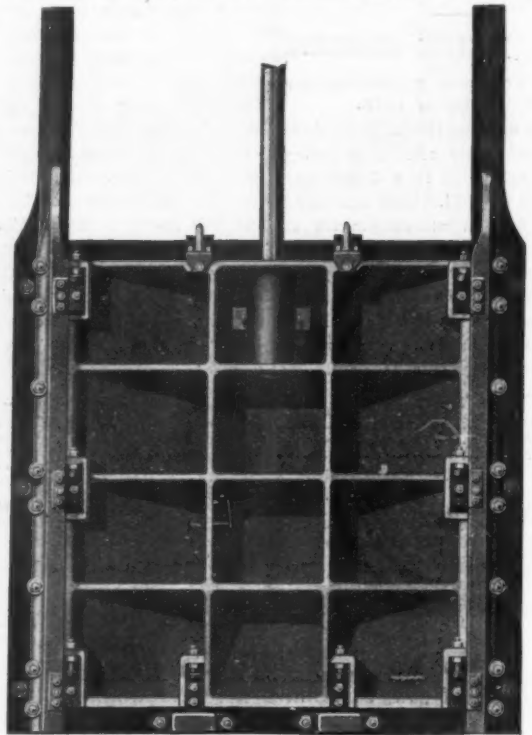
Shoveling Machines for Underground and Surface Work.

The machines manufactured by the Myers-Whaley Company, Knoxville, Tenn., for the various forms of shoveling work, both in surface and mining operations, are stated to have shown great efficiency and a considerable saving in cost wherever used. The accompanying illustration shows the shoveling machine for

of 100 to 150 cubic yards solid in 10 hours. It has loaded rock, picking it up off the ground unaided, weighing as much as 2000 pounds, and is constantly handling rock weighing from 10 pounds to 500 pounds. The machine goes right into the broken rock, making its own pathway. For the actual operation of the machine only one man is needed. Two men shift the cars and one man helps in front of the machine on scattered rock that the machine misses.

It is stated that in coal mining, from actual experience, this machine will load

Y., are shown in the accompanying illustration of one of the gates recently made. The company also manufactures hand, hydraulic and electric hoisting mechanisms for sluice and head gates. This company is a pioneer in this line of work, having been established in 1884. Since that date it has executed some of the largest orders for such products that have been placed in the United States. It is at present completing a large contract for gates and hoisting apparatus for the new Catskill aqueduct for the water supply of

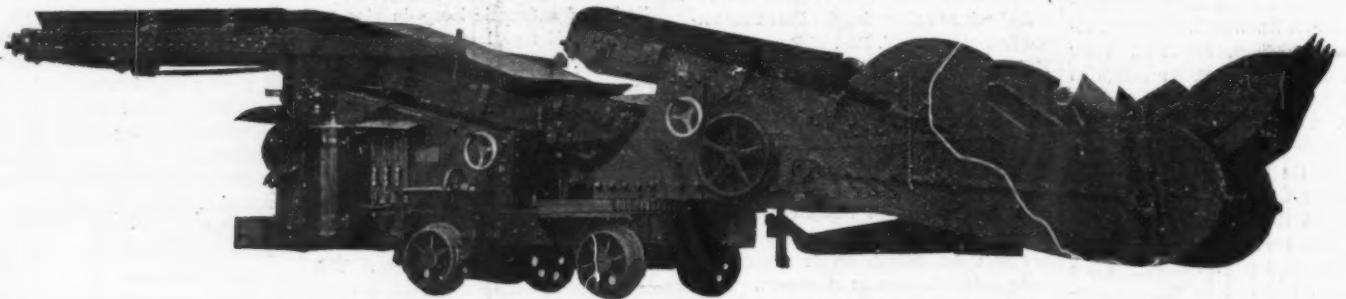


COLDWELL-WILCOX BRONZE MOUNTED GATE.

coal as shot down in the rooms of the mines at a rate of two tons in three minutes. On five days' consecutive tests, counting the time of shifting the cars and the machine from room to room and the loading time, it has loaded coal at the rate of 25 tons per hour.

The construction is apparent in the illustration. The shovel has a double bucket, which practically doubles the speed of operation. The bucket takes the material, drops it on the first conveyor, which carries it forward and drops it on the second conveyor, which carries the mate-

New York city. The gates and hoisting apparatus furnished under this contract are very heavy and are designed to stand the test of time, everything being specified of the best material and workmanship. The illustration shows one of its standard gates, which is fully bronze mounted on all bearing surfaces and is fitted with adjustable bronze wedges. It is claimed that the type of gate manufactured by this company is second to none, being the result of many years of careful study and experience of competent engineers and mechanics.



THE CONTRACT SHOVELING CO.'S PATENT ROCK HANDLING MACHINE.

is both positive and uniform; also that the quantity of yarns produced is large from the fact that it can be speeded up and all the spindles kept running all the time.

The ring rail lifting frame, substituted for the traverse rod, when properly adjusted, is claimed to absolutely prevent any tangled sets of bobbins, thereby saving a great loss of waste in hard-twisted yarns. Another advantage claimed is that the spindle and case go in the spindle rail from underneath, making it practically impossible to break or damage a bolster case or any of the parts connected with the spindle by rough handling.

This machine may be seen in operation

etc. The machine will not be sold by the Contract-Shoveling Co.

It is claimed to do in a mechanical way what has previously been done by hand in mining and similar work. By means of it material can be shoveled from the ground and loaded into wagons and cars with speed and by mechanical power. The machine shown in the illustration is 26 feet long, weighs 15,000 pounds, and is run by a 15-horse-power electric motor on a 44-inch track, and shovels a path 18 feet wide.

This particular machine is now being used in a Georgia tunnel which is being cut through rock in a mountain for viaduct work. It is handling rock at a rate

rial above the car or wagon in which it is loaded. There are four types of underground machines; a traction machine, adapted for work where no rails are laid and no stationary power plant is at hand, and a standard-gauge turntable machine adapted for work in loading coal, coke, ore, etc., from stock piles. An illustrated booklet describing this machine and its advantages has been issued by the Myers-Whaley Company.

Coldwell-Wilcox Sluice and Head Gates.

The design and construction of sluice and head gates as manufactured by the Coldwell-Wilcox Company, Newburgh, N.

Among the contracts which this company has completed in the South are the following: At Grayson, Va., for the Appalachian Power Co.; at Chattanooga, Tenn., for the Chattanooga & Tennessee River Power Co.; at Richmond, Va., for the Municipal Power Co., the city waterworks and the Chesapeake & Ohio Railroad; at Dallas, Tex., for the city waterworks; at Oklahoma City, Okla., for waterworks; at San Benito, Tex., for the San Benito Land & Water Co.; for the waterworks in Lynchburg, Va.; Charlotte, N. C., and Waco, Tex.; at New Orleans, for the Sewer & Water Co.; at Washington, D. C., for the District of Columbia; for the United States Reclamation Service at

various points. An order is now being filled for an installation at Cumberland, Md.

Preventing Dust on Macadam.

At the recent 1912 meeting of the Engineering Society of Wisconsin, John F. Icke, city engineer of Madison, read a paper, of which the following is an extract:

"A macadam road, as we all know, is made of crushed stone of varying sizes held in place by filling the interstices with smaller stone, stone dust or other suitable material as a binder. In the ordinary water-bound macadam a cementing action

neers and others interested in road work have been experimenting with various materials and methods of application designed as a substitute for water as a dust layer. The use of tar or asphaltic oil applied to the surface of the road, or of tar or asphalt as a binder for the upper two or three inches of the road surface is now good practice in many localities. The application of tar or asphaltic oil on the surface of the road is generally spoken of as surface treatment. The writer's experience with the use of tar in the surface treatment of macadam streets dates back to the year 1908, when the first trial was made. The material used was a prepared

ilar in all respects to the first, except that the quantity of tar per square yard was about one-third of a gallon. This second treatment was given primarily to cover the individual stones which projected above the general surface of the pavement and were thus not thoroughly covered by the first treatment. Several excavations made in the street since the last treatment show that the tar penetrated the surface of the road from three-quarters of an inch to one inch, and thoroughly bound the surface. How soon it will be necessary to again apply the tar it is impossible to tell; however, it is safe to say it will not be necessary to apply another treatment for at least three years, and possibly not for five or six. The above-mentioned treatment has practically eliminated the formation of dust caused by the breaking down of the stone under traffic. The street is, however, not dustless, as more or less dust is brought upon it from traffic and other outside sources, and it has been found advisable to give the street more or less sprinkling with water to keep down the small amount of dust which does accumulate on the streets from the sources mentioned above. The street surface is so well bound that any ordinary rain will free the surface from dust as though it were an asphalt pavement. One objection to the above-mentioned treatment is that it leaves the street slippery at these times when due to weather conditions, other pavements like asphalt are also slippery.

"The cost of the first treatment was seven cents per square yard. In this cost is included all the items which should enter, namely, the cost of cleaning the street, the cost of the tar, of heating and applying it, the cost of the screenings and applying them, and the cost of rolling. The second treatment cost four cents per square yard, as the quantity of tar applied per square yard was less. In addition to applying the heavy tar mentioned above, a lighter tar (Tarvia B), requiring no heating before applying, has been used with considerable success. This tar is sufficiently fluid under ordinary temperature to run freely from the tank cars in which it is shipped. Before applying the

part of the public on account of the raising of dust while the sweeping is being done. The raising of a dust while sweeping may be lessened somewhat by sprinkling lightly with water previous to sweeping. The tar is hauled from the tank cars to the street in wagons equipped with a sprinkling attachment to the rear of the wagon. Several such attachments are on the market, the general principle of all being the same. Suitable regulating valves are provided on the attachment which makes it possible to gauge the quantity of tar to be applied. In practice above one-third of a gallon of tar per square yard of street surface is applied. The tar, especially during warm weather, penetrates into the surface of the macadam sufficiently at the end of from 6 to 12 hours to enable the street to be thrown open to traffic. The efficiency of the tar as a dust preventative lies in the fact that it penetrates the surface of the street from one-fourth to one-half inch and firmly binds the stone in place. The cost of the cold-tar application described above is about one and nine-tenths of a cent per square yard. In order to get the best results a second application of tar should follow the next season after the first application. These two applications will then be sufficient for the two or three following seasons."

Herewith are two views of the roads referred to.

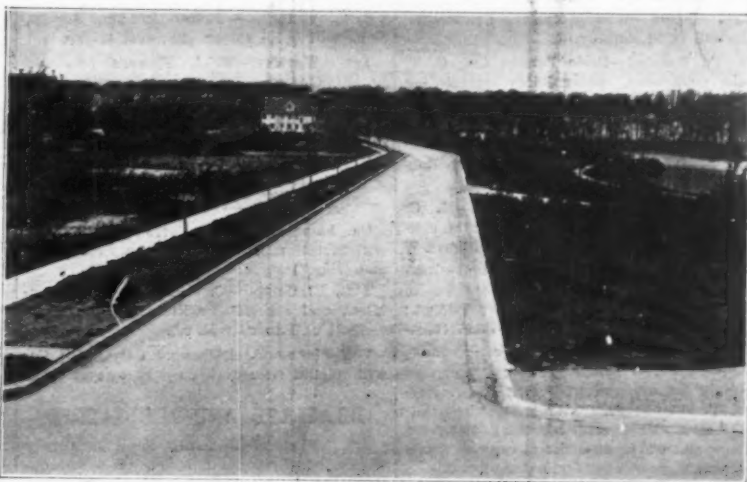


TARVIATED ROAD AT MADISON, WIS.

takes place between the crushed stone and the dust used as a binder, the degree of this cementing action depending upon the material used as crushed stone and the material used as a binder. The harder the rock, the less able it is to absorb moisture, and the more difficult it is to bind. For this reason the granites are more difficult to bind than the limestones when used as a road material. In order to keep macadam street in good condition it must receive sufficient traffic to furnish more or less dust, and moisture must be provided to aid in keeping the stone cemented. If a sufficient amount of moisture is not present, then the road will ravel and will be rapidly destroyed, especially if very much automobile traffic passes over the road. In order to supply the necessary moisture the method, known to all of us, of applying water with a sprinkling wagon has been used almost exclusively in the past. The water so applied furnishes the moisture which is absolutely necessary to keep the macadam well bound, and also acts as a dust layer or dust preventative. Many objections to the use of water as a dust preventative may, however, be urged. If the water is applied in just the right quantity to lay the dust, but not in quantities enough to make the road surface unnecessarily muddy, then the service may be considered fairly satisfactory. The difficulty lies, however, in the almost impossible task of having the water applied often enough and in quantities sufficient only to keep the surface moist. Another objection to the use of water is on account of the injurious effect upon the road material that the frequent application of water has. Any slight depression in the surface of the road will collect and hold water which will soften up the road surface and hasten the formation of still greater depressions. Still another objection exists in case the supply of water is inadequate. The demand upon the water-works system is usually already great at that season of the year when the sprinkling of the streets is most urgent and in many cases the heavy demand of the sprinklers seriously interferes with the pressure throughout the system. For some years past engi-

tar known as Tarvia A, made by the Barrett Manufacturing Co. of Philadelphia, New York, etc.

"The street in question was one built of crushed limestone in 1897. The surface was in ideal condition, with very few depressions or irregularities. The preliminary treatment of the road surface before applying the tar consisted in thoroughly sweeping the street surface to remove as much of the dust as possible. The consistency of the tar was such as to make it necessary to heat it before it could be applied. Application was by means of



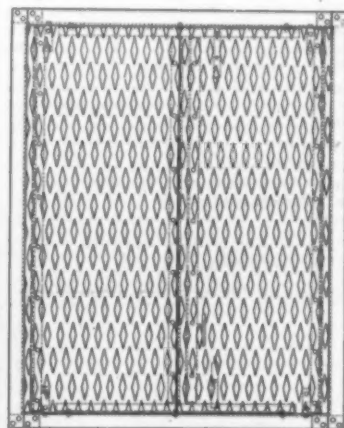
TARVIATED ROAD AT MADISON, WIS.

sprinkling cans with broadened nozzles. Approximately one-half gallon of tar was applied per square yard of surface. The surface of the tar was covered with a thin layer of coarse limestone screenings approximately one-quarter inch in diameter, from which practically all the dust had been removed. The street was rolled with a 15-ton roller and was thrown open to traffic as soon as possible thereafter. After a short time, and after the excess of screenings had been worn away, the street resembled in many respects a sheet-asphalt pavement. After the lapse of two years a second treatment was given sim-

ilar to the first, except that the quantity of tar per square yard was about one-third of a gallon. This second treatment was given primarily to cover the individual stones which projected above the general surface of the pavement and were thus not thoroughly covered by the first treatment. Several excavations made in the street since the last treatment show that the tar penetrated the surface of the road from three-quarters of an inch to one inch, and thoroughly bound the surface. How soon it will be necessary to again apply the tar it is impossible to tell; however, it is safe to say it will not be necessary to apply another treatment for at least three years, and possibly not for five or six. The above-mentioned treatment has practically eliminated the formation of dust caused by the breaking down of the stone under traffic. The street is, however, not dustless, as more or less dust is brought upon it from traffic and other outside sources, and it has been found advisable to give the street more or less sprinkling with water to keep down the small amount of dust which does accumulate on the streets from the sources mentioned above. The street surface is so well bound that any ordinary rain will free the surface from dust as though it were an asphalt pavement. One objection to the above-mentioned treatment is that it leaves the street slippery at these times when due to weather conditions, other pavements like asphalt are also slippery.

Ideal Steel Cellar Doors.

The steel cellar doors manufactured by the Smith Fence & Iron Co., Waynesboro, Pa., contain many original and important features. The "Ideal" pattern is shown in the illustration. These doors have roughened steel angle frames and never-slip diamond plates, both level with the pavement. They are fitted with concealed hinges, lifting device and locking attachment which operates either from the inside or outside. The doors are reinforced with steel angles, have close-fitting joints,



"IDEAL" STEEL CELLAR DOORS.

and provision is made for a safety rail. They are furnished either with painted or galvanized finish. They are designed especially for concrete pavement, but are equally suited for any other kind of pavement. The doors open to an angle of 60 degrees, and the hinges are protected by safety chains, preventing abnormal shocks on door and hinges. Provision is made to securely anchor doors down to concrete pavement or wall openings if desired. These doors are made in stock sizes, 48x48, 48x54 and 48x60 inches. Special sizes are made to order.

This company also manufactures iron fences, fire-escapes, steel swings and settees, steel jail cells, etc. Catalogues and other information will be sent on request to the company. Active agents are wanted in every town and city to sell its manufactures.

Construction Department

TO OUR READERS!

In order to follow up properly the Construction Department items, please bear in mind the following statements:

EXPLANATORY

The MANUFACTURERS' RECORD seeks to verify the items reported in its Construction Department by full investigation. It is often impossible to do this before the item must be printed or else lose its value as news, and in some items it is found advisable to make statements as "it is reported" or "rumored," and not as positive information. If our readers will note these points they will see the necessity of the discrimination. We are always glad to have our attention called to errors that may occur.

HOW TO ADDRESS

The name of one or more incorporators of a newly incorporated enterprise should always be shown on letter addressed to the official headquarters or to the town of the parties sought, as may be shown in the item. Sometimes a communication merely addressed in the corporate or official name of a newly established company or enterprise cannot be delivered by the postmaster. By following these general directions the postoffice will be enabled to deliver your mail promptly, although it is inevitable that some failure by the postal authorities to deliver mail to new concerns will occur.

WRITE PERSONAL LETTERS

In communicating with individuals and firms reported in these columns a letter written specifically about the matter reported will receive better and quicker attention than a circular. In most instances a return postal card or addressed and stamped envelope should be enclosed with letter.

In correspondence relating to information published in this department, it will be of advantage to all concerned if the Manufacturers Record is mentioned.

The Daily Bulletin of the Manufacturers Record is published every business day in order to give the earliest possible news about new industrial, commercial, building, railroad and financial enterprises organized in the South and Southwest. It is invaluable to manufacturers, contractors, engineers and all others who want to get in touch at the earliest moment with new undertakings, or the enlargement of established enterprises. The subscription price is \$25 per year. On all advertising contracts in the Manufacturers Record for three months or longer a subscription to the Daily Bulletin is included for the contract period.

BRIDGES, CULVERTS, VIADUCTS

Ark., Fayetteville.—Washington county will open bids during May to construct bridge across White River at Smith's Ford; 490 feet long; 16-foot roadway; one large and two small spans; cost \$14,000; plans at office of County Judge, Benjamin F. Greer; construction during July and August. (Recently noted.)

Miss., Clarksdale.—Coshoma County Supervisors will issue \$50,000 bonds for bridge and road construction.

Mo., Potosi.—Bismarck, Bellvue Valley & Western Railway Co., E. E. Eveno, president, 924 Chemical Bldg., St. Louis, Mo., will construct two bridges, one span each, across Big River and Cedar Creek.

S. C., Beaufort.—H. A. Beard, Boston, Mass., present address, Beaufort, is having plans prepared by Mr. Critzberg, Rock Hill, S. C., for bridge connecting Beaufort with Ladies Island; cost \$120,000.

S. C., Greenville.—City awarded contract to J. R. Lawrence to construct concrete bridge over Academy Run in City Park. (See "Road and Street Work.")

Tenn., Nashville.—Lewisburg & Northern Railroad (branch of Louisville & Nashville Railroad, W. H. Courtenay, chief engineer, Louisville, Ky.) awarded contract to Foster-Creighton-Gould Company, First National Bank Bldg., Nashville, to construct bridge over Cumberland River; steel and concrete; 3300-feet long and 120 feet high; one 300-foot, three 200-foot and two 115-foot spans; viaduct approach to consist of one 80-foot and

one 40-foot span; foundation of solid rock, which is about 20 feet below low-water mark of river; cofferdams of steel and block piling; two tracks; require 12,000 tons structural steel; cost \$500,000 to \$600,000; company also has contract for 52 other bridges on same railway between Nashville and Birmingham, Ala. (Recently mentioned.)

Tex., Dallas.—City, Dallas Terminal Railway and street railways will construct culvert across Peak St. at Parry and Exposition Aves.; cost \$7800; J. B. Winslett, City Secretary.

Tex., Seguin.—Guadalupe county will construct 175-foot span across Guadalupe River; bids received until April 4; J. M. Woods, County Judge.

Va., Cedar Bluff.—Tazewell county will construct steel bridge at Cedar Bluff; P. St. J. Wilson, State Highway Commissioner, Richmond, Va. (See "Machinery Wanted.")

Va., Richmond.—Henrico and New Kent counties will jointly rebuild Bottom's Bridge across Chickahominy River destroyed by flood; new structure of steel and concrete. Address Henrico County Commissioners at Richmond or New Kent County Commissioners at New Kent, Va.

CANNING AND PACKING PLANTS

Fla., Largo.—Largo Canning Co. organized with M. W. Ulmer, president; S. T. Johnson and F. S. Gray, vice-presidents; Charles B. F. Wander, secretary; M. Frank, assistant secretary; John S. Taylor, treasurer.

Fla., Miami.—Z. T. Waldron, C. W. Norris and J. D. McKee, all of Chicago, Ill., contemplate establishing plant to can tomatoes, etc.

Fla., Pinellas.—J. R. Jeffords & Co. will erect packing plant; concrete blocks.

Ga., Atlanta.—Gideon C. Jones (president Jones Bros. Company), Denver, Colo.; K. K. Kelley of Kelley Bros. and O. W. Stamps of Fain & Stamps, both of Atlanta, will establish pickling and vinegar products plant, including cider, pickles, condiments, jellies, etc.; incorporated company with \$100,000 capital stock.

Ky., Fullerton.—Fullerton Canning Co. (J. N. Brickey interested) awarded contract to Hastings Industrial Co., Chicago, Ill., to erect canning plant; two stories; 80x32 feet; cost of machinery \$5000; daily capacity 10,000 cans of tomatoes. (Recently noted.)

Md., Baltimore.—William Schluderberg & Son, Bank and 3d Sts., will erect addition to plant; two stories; brick; 65x65 feet.

Md., Easton.—Willard Smith, Centerville, Md., will build cannery.

N. C., Roxobel.—Peele Peanut Co., C. T. Peele, proprietor, contemplates establishing potato cannery. (See "Machinery Wanted.")

Okla., Choteau.—Choteau Canning Co., capital stock \$6000, incorporated by A. F. Hennigh, R. D. Moan, W. F. Davis, Clay Robbins and A. Bell.

Tex., Rockport.—J. H. Bell and H. C. Shaner, San Antonio, Tex., will build cannery. (See "Ice and Cold-Storage Plants.")

Tex., Magnet, postoffice at Wharton.—Company organized with \$2500 capital stock to establish cannery; C. M. Bailey, president; S. C. Dorsey, vice-president; M. Huff, treasurer; E. E. Milken, manager.

Va., Suffolk.—Virginia Packing Co., capital stock \$25,000, incorporated with N. G. Norfleet, president; J. T. Williams, vice-president; H. N. Fitzgerald, secretary, treasurer and manager; manufactures canned goods and peanut products; factory equipped.

CLAYWORKING PLANTS

Mo., Knobnoster.—Brick and Tile—G. M. Boyd Brick & Tile Co., capital stock \$175,000, incorporated by G. M. Boyd, John Boyd, A. G. Stump and others.

Md., Oakland.—Bricks.—H. W. Kahl & Sons will establish plant to manufacture bricks and concrete blocks.

Tenn., Chattanooga.—Key-James Brick Co. (recently noted incorporated with \$50,000 capital stock) awarded all contracts for brick plant; daily output 50,000 shale bricks; W. P. James, president; C. E. James, vice-president; J. D. Key, secretary-treasurer.

Va., Occoquan.—Bricks.—District of Columbia will erect brick kilns at Occoquan workhouse; awarded contract for furnishing 300,000 fire bricks and 60 tons fire clay; William V. Judson, engineer-commissioner, District Bldg., Washington, D. C. (Call for bids on

brick recently noted under "Machinery Wanted.")

COAL MINES AND COKE OVENS

Ala., Marvel.—Roden Coal Co. will increase output of coal mines from 1200 to 1500 tons; erect 20 miners' dwellings and commissary to cost \$10,000.

Ky., Barbourville.—Dean Coal Co., capital stock \$25,000, incorporated by H. W. Smith, H. W. Sanford, A. B. Day and others, all of Knoxville, Tenn.; leased and will develop on 100 acres near Barbourville; daily output 500 tons coal.

West Virginia.—New River & Ohio Coal Co., capital stock \$100,000, incorporated by H. F. Pinger (Old Colony Bldg., Chicago, Ill.) and others.

W. Va., Morgantown.—Elkins Coal & Coke Co. will, it is reported, develop additional coal mine in Bretz field of 48,000 acres.

CONCRETE AND CEMENT PLANTS

Ala., Bessemer.—Concrete Blocks.—J. G. Johnson will build concrete-block factory; site 100x125 feet.

Ark., Jonesboro.—H. L. Adkins will build concrete plant.

Md., Oakland.—Concrete Blocks.—H. W. Kahl & Sons will establish plant to manufacture structural concrete blocks and bricks.

COTTON COMPRESSES AND GINS

Ga., Smyrna.—Smyrna Cotton Oil & Gin Co. plans installing four 70-saw cotton gins, cotton-oil mill, fertilizer mixer, 150-horsepower engine and boiler, electric motors, etc.; has not bought machinery; M. V. Ruff, manager, 409 Rhodes Bldg., Atlanta, Ga.; company lately reported incorporated with \$50,000 capital stock. (See "Machinery Wanted.")

Ga., Vidalia.—Vidalia Compress & Power Co. will erect cotton compress.

La., New Orleans.—Commercial Press & Warehouse Co., capital stock \$50,000, incorporated; Maurice Stern, president; S. Walter Stern, vice-president; Edgar B. Stern, secretary-treasurer.

S. C., Smmerton.—Henry A. Tisdale will rebuild cotton gin burned at loss of \$3000.

Tex., Galveston.—Galveston Cotton Compress & Warehouse Co. purchased 7 city blocks of land as site for proposed compressing and storage facilities for 100,000 bales cotton.

Tex., Victoria.—Henry Braden, Seguin, Tex., will build cotton gin; cost \$18,000.

Tex., Waelder.—M. I. Flowers (recently noted to erect cotton gin) will build 66x50-foot concrete and corrugated-iron structure; install machinery costing \$5000; building plans and construction by owner; daily capacity, 50 bales. (See "Machinery Wanted.")

COTTONSEED-OIL MILLS

Ga., Smyrna.—Smyrna Cotton Oil & Gin Co. will install mill. (See "Cotton Compresses and Gins.")

Tex., El Campo.—C. O. Dahlgren, Gloster, Miss., and associates will establish cottonseed-oil mill to cost \$40,000.

Va., Richmond.—Richmond Cotton Oil Co. will rebuild refinery burned at loss of \$2000.

DRAINAGE AND IRRIGATION

Ark., Piggott.—Geo. W. Selts, secretary St. Francis Drainage District, advises Manufacturers Record that district has expended more than \$300,000 since organization six years ago; March 22 sold bonds for \$165,000 to complete main work; when main ditch and levee are completed, cost about \$500,000, probably as much will be expended for laterals and small ditches to drain into main drains; laterals now being cut; system will drain 150,000 acres in Clay and Greene counties; large canal 40 miles long and levees about 55 miles long; contractors, A. V. Willis & Sons of Paragould, Ark., engineers in charge; J. D. Mitchell of Rector, Ark.

Fla., Miami.—Everglade Land Sales Co., R. M. Price, secretary, will construct 12-mile canal; 20 feet wide at bottom with side slopes of 1 to 1; average depth, 6.5 feet; involves removal of 470,000 cubic yards earth and 16,000 cubic yards rock; bids received until April 6; W. J. Kackley, engineer, Dorn Bldg., Miami. (See "Machinery Wanted.")

Fla., West Palm Beach.—Trustees of Inter-

nal Improvement Fund have had survey made for proposed canal from West Palm Beach to Lake Okeechobee by chief drainage engineer, J. O. Wright, Tallahassee, Fla., who will prepare specifications and advertise letting; canal 40 miles long, about 50 feet wide and 10 feet deep.

La., New Orleans.—St. Bernard Alluvial Lands Co. incorporated with \$500,000 capital stock by E. L. Chappuis and associates; this corporation is one of various organizations connected with recently-detailed plans for reclaiming alluvial lands.

La., Vinton.—Vinton Drainage District voted \$106,000 bond issue for construction of drainage system to reclaim 65,000 acres. Address Calcasieu Parish Police Jury, Lake Charles, La. (Recently mentioned.)

Tenn., Selmer.—Commissioners Big Muddy Creek Bottom Drainage District, T. B. Whitehurst, chairman, awarded contract to W. C. McGinnis, Bement, Ill., to construct drainage canal; 7½ miles long; top width, 23 feet; bottom width, 8 feet; depth, 7 feet; remove 197,700 cubic yards dirt; issued \$300,000 bonds. (Recently mentioned.)

Tex., El Paso.—El Paso Landowners' Association organized by A. S. J. Elyar, A. H. Goldstein, H. C. Myles and others; will make various improvements on San Elizario Island, including roads, canals, dams, etc.; has constructed wing dam, is building 1500 feet of levee to protect land from overflow of river, and proposes construction of canal to extend entire length of island at estimated cost of \$30,000.

Tex., Fort Worth.—Wiggins Subirrigated Land Co., capital stock \$50,000, incorporated; L. A. Suggs, president; John M. Scott, vice-president; J. J. Parker, treasurer; William Horton, secretary; John L. Wiggins, manager.

Tex., Port Arthur.—Port Arthur Rice Irrigation Co. will expend \$75,000 to drain 320 acres of land; construct 12 canals; install 175-horsepower pumps with 7,000,000 to 8,000,000 gallons capacity per hour; surveys by Port Arthur Land Co.; two-thirds of land used for rice culture and one-third for rotation crops; construction by dredge; bids opened during May. (Recently noted.)

Tex., Grandfalls.—Commissioners Grandfalls Drainage District receive bids until April 16 for construction of drainage system; \$33,000 bonds issued; H. E. Moore, president. (See "Machinery Wanted.")

ELECTRIC PLANTS

Ark., Hamburg.—City will issue additional bonds for extension of electric-light plant and water-works. Address The Mayor.

Ark., Pine Bluff.—Pine Bluff Co. completed organization with F. G. Bridges, president, Pine Bluff; H. R. Dennis, vice-president, New York; B. C. Fowles, general superintendent and treasurer, Pine Bluff; will operate electric-light plant, water-works and street railway system; enlarge electric power-house on W. Fourth Ave. and install additional machinery. (Company recently reported incorporated with \$1,200,000 capital stock.)

D. C., Washington.—House of Good Shepherd has plans by Milburn, Helster & Co., Home Life Bldg., Washington, for power-house, etc.

Ky., Booneville.—Booneville Light & Power Co. incorporated by H. C. Combs, T. C. Fuller and C. B. Moore to construct electric-light plant.

Ky., Falmouth.—City awarded contract to Fraser & Bush, Lexington, Ky., for erection and equipment of electric-light plant; equipment consists of 35 or 50 K. V. A. engine and generator, switchboard, boiler, piping, pole line, transformers, series street lights, etc.; cost \$16,000; Anderson & Frankel, engineers, Lexington, Ky.; N. C. Ridgway, Mayor. (Call for bids lately noted.)

Md., Elkton.—Home Manufacturing, Light & Power Co. incorporated with \$3500 capital stock and \$50,000 bonds by W. S. Evans, James F. Powers, Edward Delbert, Elmore Delbert and Sterling Evans; proposes to acquire small established plant and build another; will erect power-house 39x45 feet, of brick and steel costing \$3000 and equip with \$15,500 gas-producer engine of 180-horsepower; will construct conduits and transformers costing \$3500.

Mo., Willow Springs.—Light, Power & Manufacturing Co., capital stock \$30,000, incorporated by W. T. Wright, W. Bucklow, E. M. Rollins, B. F. Thomas and others.

N. C. Maxton.—Maxton Light & Power Co., capital stock \$50,000, incorporated by J. J. Kincaid, W. M. Kincaid and McKay McKinnon.

N. C. Spencer.—City is considering construction of electric-light plant; J. B. McCarty Company, Atlanta, Ga., submitted proposition.

Tex., Eagle Lake.—Eagle Lake Water & Light Co., Box 291, Geo. Herder of Weimar, Tex., president, takes over plant formerly operated by Eagle Lake Manufacturing Co. (See "Water-works" and "Machinery Wanted.")

Tex., Anson.—City Water & Light Co. will erect electric-light plant; 100 horse-power; building 30x60 feet; frame; plant cost \$10,000; J. W. Skinner, engineer in charge; day labor. (Recently noted organized.)

FERTILIZER FACTORIES

Fla., Miami.—W. C. Grove and associates will establish fertilizer factory; daily capacity 50 tons; cost \$75,000.

Ga., Adel.—Adel Oil & Fertilizer Co., capital stock \$50,000, incorporated by C. C. Giddies of Adel, J. N. Bray and D. C. Ashley of Valdosta, Ga.; Mr. Giddies, general manager.

Ga., McRae.—Telfair Fertilizer Co., M. L. McRae, president, will expend \$25,000 to erect fertilizer plant; 175x200 feet; fireproof construction; electric lighting. (Recently noted to erect plant.)

Va., Harvey's Wharf.—Davis-Palmer Company, capital stock \$100,000, incorporated; C. E. Davis, president; C. P. Palmer, vice-president; Albert E. Davis, secretary-treasurer; all of Fleeton, Va.

Ga., Smyrna.—Smyrna Cotton Oil & Gin Co. will install fertilizer plant. (See "Cotton Compresses and Gins.")

FLOUR, FEED AND MEAL MILLS

Ky., Knob Lick.—L. E. Ball will probably erect roller mill.

Tex., San Antonio.—Tamalina Milling Co. will erect five-story mill building; storage capacity, 75,000 bushels; D. Martinez is president.

Va., Ringgold.—J. W. McDonald acquired Ringgold Roller Mills and contemplates installing additional machinery, including 25-horse-power gasoline engine, bran duster and probably another double stand of rolls with two small reels; installing elevators and corn cleaner in corn mill.

Va., Middletown.—Gochenour & Shaffer Company incorporated; Jos. H. Gochenour, president; Vernon S. Shaffer, secretary-treasurer.

FOUNDRY AND MACHINE PLANTS

Ala., Birmingham.—Structural Iron Work, etc.—Ingalls Iron Works Co., R. I. Ingalls, president, advises Manufacturers Record that details of recently-noted three buildings are not fully decided; fireproof throughout; plans by company's engineering department; construction engineer, R. C. Roether, care of company; manufactures structural and ornamental iron work; further details later.

Ala., Birmingham.—Radiators.—American Radiator Co., 316 S. Michigan Ave., Chicago, Ill., has purchased, it is reported, 400-acre site at Irondale for foundry, and is said to contemplate constructing hydro-electric plant, at cost of between \$1,000,000 and \$2,000,000, on Cahaba River, seven miles from foundry site. Company's vice-president, W. H. Hill, writes to Manufacturers Record that nothing will be done regarding building plant in Birmingham for at least a year and no plans whatever have been made. (Company's purpose to build foundry heretofore reported.)

Ala., Ensley.—Car-repair Shops, etc.—The Tidewater Company (J. M. Dewberry and others), Birmingham, Ala., purchased at Ensley five acres and will erect car-repair shops, etc.

Ill., East St. Louis.—Malleable Iron.—Missouri Malleable Iron Co., P. E. Nulsen, president and general manager, East St. Louis, Ill., awarded all contracts for erection of buildings recently noted to be rebuilt; one-story brick structures, with high ribbed reinforced concrete roof; area about 20,000 square feet; cost within \$25,000. (Recently noted under St. Louis, Mo.)

Md., Baltimore.—Machinery.—International Machinery & Stamping Co., capital stock \$50,000, incorporated by Herman T. W. Helmlinger (22 E. Lexington St.), Vincent Ambrose and Joseph L. McAnister.

Miss., Hattiesburg.—Machinery.—T. O. Watkins Foundry Co. incorporated with \$50,000 capital stock by T. O. Watkins, E. F. Rush, R. D. Moore and others; succeeds Watkins Machine & Foundry Co.

Tenn., Chattanooga.—Ornamental Iron.—Price-Evans Foundry Co. is having plans prepared by Bearden & Deacon of Chattanooga for ornamental-iron foundry; concrete foundation; brick; 90x110 feet.

Tenn., Knoxville.—Bag-sewing Machinery.—Economy Bag Closing Co., capital stock \$10,000, incorporated by J. E. Miller, J. Allen Smith, H. A. Goforth and others; will market four patented machines to sew mouths of filled bags.

Tenn., Memphis.—Blacksmith Shop.—Joel and Hugh Wynne awarded contract to J. W. Tatum of Memphis to erect blacksmith shop; two stories; red brick.

Tenn., Nashville.—Threshers, etc.—Geisler Manufacturing Co. has permit to erect addition to plant; brick; cost \$2500.

Va., Richmond.—Safe Plant.—R. L. Barnes Safe & Lock Co. will rebuild plant burned at loss of \$60,000.

Va., Richmond.—Iron Works.—Boyd Iron Works will rebuild plant burned at loss of \$30,000.

GAS AND OIL DEVELOPMENTS

La., Shreveport.—Equitable Oil & Gas Development Co., capital stock \$25,000, incorporated; purchased and will develop gas and oil land; W. F. Wood, president; W. T. Ramey, vice-president; O. F. Simmons, secretary-treasurer.

Miss., Gulfport.—Gulf Coast Gas Co. increased capital stock from \$100,000 to \$200,000.

Louis Bowen and others will establish 30-ton ice plant; cost \$25,000.

Tex., Floresville.—Floresville Ice & Power Co. placed contract for six-ton ice plant; will erect semi-fireproof 33x65-foot building to cost \$10,000; erection by company; construction engineer, W. G. E. Roloff, San Antonio, Tex. (Recently noted incorporated.)

Tex., Rockport.—J. H. Bell and H. C. Shauer, San Antonio, Tex., will build 12-ton ice plant, cannery and steam laundry.

Tex., Sweetwater.—Sweetwater Ice Co., capital stock \$50,000, incorporated by W. G. Swenson, W. J. Fulwiler and L. L. Stephenson.

Tex., Weimar.—Weimar Ice & Cold Storage Co., capital stock \$20,000, incorporated by George Herder, George Herder, Jr., J. C. Boettcher and F. F. Anders.

LAND DEVELOPMENTS

Ala., Boaz.—Sand Mountain Land & Townsite Co., W. W. Shortridge, president, will develop several thousand acres on Birmingham & Chattanooga Railroad; farm and townsites; P. S. Milner, Birmingham, Ala., engineer in charge. (Recently noted incorporated with \$5000 capital stock.)

Ala., Ensley.—Unit Land Co., capital stock \$4000, incorporated; B. R. Pegram, president; R. E. Meade, vice-president; H. S. Meade, secretary-treasurer.

Fla., Baker County.—C. F. Laughlin, F. E. Wettstein, W. W. Long and others of Cleve-

Tex., Belton.—Belton Townsite Co., capital stock \$4000, incorporated by George W. Tyler, W. S. Hunter and M. P. McElhannon.

Tex., El Paso.—El Paso Land Owners' Association organized by A. E. J. Eylar and others to improve San Elizario Island by building roads, etc. (See "Drainage and Irrigation.")

Tex., Harlingen.—Rio Grande Land Corporation, capital stock \$5000, incorporated by E. F. Hall, A. W. Cunningham and M. V. Pendleton.

Tex., Houston.—Moore's Bluff Rice Corporation, capital stock \$250,000, incorporated by F. R. Reese of Houston and J. E. Fields of Blackwell, Okla., to cultivate rice, construct irrigation systems, etc.

Tex., San Antonio.—Southwestern Development & Land Co., capital stock \$20,000, incorporated by J. A. Logwood, D. S. Hundson and A. R. Holzschauer.

W. Va., Huntington.—Fairfield Orchard Co., capital stock \$25,000, incorporated by J. M. McConch, Frank Enslow, Jr., J. Lee Sehon and Henry Simms; continues development of apple orchards.

W. Va., Romney.—High Mountain Orchard Co. will develop 62½ acres on High Knob Mountain, in Hardy county; improvements include clearing, planting, developing and growing commercial orchard; cost \$10,000; no bids required; D. E. Pugh, president; W. W. McClaine, secretary-treasurer. (Recently noted incorporated.)

LUMBER MANUFACTURING

Ala., Fayette.—L. W. Patterson, Madisonville, Ky., purchased logs delivered at Fayette from Baskett Lumber & Manufacturing Co. and will erect mill. (See item Baskett Lumber & Manufacturing Co., Fayette, Ala.)

Ala., Fayette.—Baskett Lumber & Manufacturing Co. (present address, Henderson, Ky.) will build railroad to timber tract; has sold logs, delivered at Fayette, to L. W. Patterson, Madisonville, Ky.; Lee Baskett, president; Milley Baskett, vice-president; Hilary Baskett, secretary-treasurer; recently noted incorporated with \$25,000 capital stock. (See "Machinery Wanted.")

Ala., Nadawah.—Nadawah Lumber Co., capital stock \$10,000, incorporated by J. R. Parker and others.

Ark., Hope.—Ransom Hardwood Lumber Co. (A. B. Ransom of John B. Ransom & Co., Nashville, Tenn., and others) leased mill and 18 acres; has lumber yard at Hope; bought 2000-acre timber tract; no further equipment needed. (Recently noted incorporated with \$50,000 capital stock under Tenn., Nashville.)

Fla., Durbin.—Robinson & Dismukes Lumber Co., capital stock \$30,000, incorporated by J. J. Robinson, S. Ben Skinner and J. H. Robinson of Jacksonville, Fla.; F. S. Dismukes, Mystic, Ga., and C. D. Dismukes, Ocella, Ga.

Ga., Dahlonega.—Cobb & Smith Timber Co., capital stock \$50,000, incorporated by Milo D. Smith and Arthur W. Smith, Gainesville, Ga.; George H. Cobb and H. L. Cobb, Ulysses, Pa., and F. A. Raymond, Coudersport, Pa.

Ga., Lumber City.—Ocmulgee River Lumber Co., capital stock \$300,000, incorporated by Cassius F. Smith, John J. Joice and John Knox.

Ga., Waycross.—United Lumber Corporation incorporated; capitalization \$1,000,000; Geo. F. Montgomery Company, Jacksonville, Fla., one of chief stockholders. This organization is in furtherance of amalgamation and other plans noted in recent statement (by George F. Montgomery, president of Montgomery Company), which included mention of improvements to recent purchases, installation of machinery, acquiring additional timber, etc.; new company to have total of 600,000,000 feet pine and cypress timber, with proposed additional deal consummated. The Marsh cypress mill and Seasons mill were recently acquired by Montgomery Company.

La., Covington.—St. Tammany Lumber Co., capital stock \$50,000, incorporated; C. R. Ketcham, president; J. A. Brinker, secretary-treasurer.

La., Glenmora.—Kirkpatrick Lumber Co., capital stock \$25,000, incorporated.

La., Lake Charles.—English Bayou Shingle Co., capital stock \$3000, incorporated; owns cypress land; F. H. Gray, president-general manager; J. R. Stodder, secretary-treasurer; H. M. Gray, vice-president.

La., Tallulah.—Singer Manufacturing Co., 149 Broadway, New York, is reported to have purchased more than 48,000 acres Madison parish lumber land at more than \$50,000 for future development.

Miss., Bay Springs.—Bay Springs Lumber Co. will erect drykiln or hot-air kiln to replace buildings recently reported burned.

FOR the benefit of business concerns, engineers, contractors, machinery manufacturers, dealers and others who find it profitable to follow up daily the industrial, commercial, railroad and financial development of the South and Southwest as published in this Construction Department, we issue every business day in the year a Daily Bulletin of the Manufacturers Record.

The construction news as published in the Daily Bulletin is invaluable to all business people who want to keep in daily touch with the organization of business enterprises of all kinds throughout the whole South. Unlimited possibilities for the creation of business, for securing contract work, for the sale of machinery and supplies of all kinds, for bond buyers and others, are to be found through a close following up of the news in the Daily Bulletin.

The Bulletin is an exceptionally desirable advertising medium.

The subscription price is \$25.00 a year. Are you a subscriber to it, or an advertiser in it? If not, you are missing an opportunity for profitable business.

Tex., Humble.—Elb Oil Co., capital stock \$10,000, incorporated by J. E. Webb, C. L. Kaiser and J. H. Nie.

Okla., Muskogee.—Sagecyah Oil & Gas Co., capital stock \$25,000, incorporated by S. T. Mallory, Tulsa; William L. Nicholson and W. L. Kerr.

Tenn., Winchester.—Franklin Oil & Fuel Co., Colorado Bldg., Washington, D. C., is proceeding with developments; has leaseholds and acreage of more than 7750 acres in Franklin County, Tenn., and Caddo Parish, La.; John L. Hargrove, president; Joseph L. Gorton, vice-president; Robert E. Heater, treasurer; Karl A. Hargrove, secretary. (Previously noted incorporated with \$500,000 capital stock, with survey of 20,000 acres made by Frederick C. Clapp, Pittsburgh, Pa.)

Tex., Boyce.—Boyce Oil & Development Co., capital stock \$20,000, incorporated by W. S. Sharp, C. A. Sharp and J. T. Smith.

W. Va., Raymond City.—Raymond, Poco Oil & Gas Co., capital stock \$20,000, incorporated by F. B. Scholz, O. E. Cullums, Harry Kener and others.

W. Va., Rockford.—R. F. D. from Lost Creek.—Rockford Oil & Natural Gas Co. incorporated by Michael Boyles, O. T. Bond and others.

ICE AND COLD-STORAGE PLANTS

Ark., Conway.—R. B. McCulloch awarded contract for additional ice machinery recently noted; six-ton absorption plant.

Ky., Williamsburg.—S. W. Easley will establish five-ton plant; drill well and manufacture ice from distilled water; contracted for equipment.

Miss., Biloxi.—E. Glennan, I. Heldenheim,

land, O., purchased 33,000 acres in Baker county and will colonize.

Ga., Augusta.—Monte Sano Realty Co. has retained Charles Summers, Dyer Bldg., Augusta, as engineer for developing 50 acres of land as residence section; to be known as Tuxedo Park; improvements will include water-works, sewerage, gravel streets, etc.; cost \$15,000.

Ga., East Point.—John J. Eagan, Third National Bank Bldg., Atlanta, Ga., will develop subdivision and residential section; plans and landscape work by P. J. Berkman Co., Terminal Bldg., Augusta, Ga.

Mo., Hollister.—Ridgedale Orchards Co., capital stock \$5000, incorporated by A. Davis, G. C. Carmichael and H. T. Wiltsee.

Okla., Oklahoma City.—Mann Development Co., capital stock \$60,000, incorporated by J. W. Mann (president), A. C. Hicks, H. L. Hicks and J. S. Ross; will develop land, especially in Central Park, Putnam Heights, Rose-Mann and Jefferson Park Additions.

S. C., Charleston.—Costal Land Development Co. will increase capital stock to \$100,000; purchased and will drain about 6000 acres of land for development. (Recently noted incorporated with \$25,000 capital stock by A. H. Latimer and others.)

Tenn., Chattanooga.—City voted \$250,000 bond issue for park improvements. Address The Mayor. (Recently mentioned.)

Tenn., Memphis.—City Commission authorized \$75,000 bond issue to improve Tri-State Fair Park for recreation purposes.

Tenn., Nashville.—Bransford Realty Co. purchased 87 acres of land and will develop residence section; erect 200 houses during 1912. (Recently noted increasing capital stock to \$1,500,000.)

Mo., Springfield.—Greene County Lumber Co., capital stock \$25,000, incorporated by J. H. Hahn, T. T. Crenshaw, S. W. Tuttle, C. C. Sheppard and J. F. McSpadden.

N. C., Creswell.—Wisconsin Lumber Co., capital stock \$10,000, incorporated; B. Sumner Gill, Philadelphia, Pa., president, treasurer and manager; B. A. Groah, Bellevue, Pa., vice-president; W. W. Walker, Bellevue, treasurer; continuous operation of plant with daily capacity 35,000 feet lumber.

N. C., Kinston.—Eastern Carolina Land & Lumber Co., authorized capital \$100,000, incorporated by W. M. Hayes, D. D. Hayes and Orin Weeks.

N. C., Waynesville.—Dover Lumber Co. (main office, Richmond, Va.) will erect band sawmill and construct 16-mile railroad to connect mill with timber tract.

Okla., Oklahoma City.—Western Timber Culture Co. organized to grow black locust trees; president, E. E. Klein, 213 Colcord Bldg.

S. C., Hampton.—W. F. Cummings will rebuild sawmill recently noted burned; construction commenced.

S. C., Kershaw.—Kershaw Lumber Co., capital stock \$5000, incorporated; R. M. Perry, president-treasurer; J. E. Williams, vice-president-secretary.

Tex., Hemphill.—Knox Lumber Co. will, it is reported, erect sawmill and develop timber land in Sabine and San Augustine counties.

Tex., Houston.—Continental Tie & Lumber Co. increased capital stock from \$200,000 to \$300,000.

Va., Konnarock.—Hassinger Lumber Co., capital stock \$250,000, incorporated with M. L. Hassinger, president, Barnes, Pa.; J. H. Hassinger, vice-president; L. C. Hassinger, treasurer, both of Konnarock.

Va., Norfolk.—Protective Land & Lumber Corporation, capital stock \$5000, incorporated; W. C. Lynch, president, Wallaceton, Va.; Besale Lynch, vice-president, also of Wallaceton; William W. Old, Jr., secretary-treasurer, Norfolk, Va.

W. Va., Logan.—Guyan Valley Planing Mill Co., capital stock \$10,000, incorporated by C. V. White of Logan, G. E. Clark, D. B. Bird, A. J. Lacy and R. S. Baldwin of Holden, W. Va.

METAL-WORKING PLANTS

Ark., Little Rock.—Metal Weather Strips.—Storm Proof Metal Weather Strip Co., capital stock \$5000, incorporated by D. Daley O'Connor, B. W. Green, W. H. Aretz and others.

Tex., Houston.—Steel Barrels.—Dr. C. S. Preston is negotiating with proposed purchaser of plant (Texas Welding & Gas Compressing Co.) as nucleus for organization of company to manufacture welded steel barrels for oil, etc.; proposition not yet definite; if consummated, company probably called American Metals Manufacturing Co.

MINING

Miss., Potts Camp.—Iron.—Memphis Mining & Manufacturing Co., \$1,000,000 capital stock, incorporated with A. C. Jones, president; W. S. Allen, vice-president; Marion Allen, secretary-treasurer; main offices, 1050 Brown-Marx Bldg., Birmingham, Ala. Wires Manufacturers Record: "Nothing for publication now." (Recently rumored as organized.)

Mo., Joplin.—Lead and Zinc.—Chicago-Lehigh Mining Co., capital stock \$80,000, incorporated by A. F. Dexter, J. F. Dexter and Elizabeth Dexter.

Tenn., Chattanooga.—Limestone.—Limestone Products Co., capital stock \$30,000, incorporated by C. W. Lawrence, J. P. Hoskins, Frederick Giddings and others.

Tex., Llanito.—Granite.—Quality Granite Works organized with C. E. Barney president, P. A. Belter general manager, William Wallace secretary.

Va., Fredericksburg.—Pyrites.—Old Dominion Sulphur Co. incorporated with \$500,000 capital stock to develop pyrites deposits; install plant with daily capacity 200 tons; president, Albert Fogg, Camden, N. J.; vice-president, C. C. Walton, Norfolk, Va.; secretary-treasurer, Walter Sparkling. Mr. Sparkling wires Manufacturers Record: "Mining sulphur pyrites; 200-ton plant complete; 300 acres include Austin run."

Va., Richmond.—Sand and Gravel.—Musterfield Sand & Gravel Co., capital stock \$50,000, incorporated; L. O. Miller, president, Richmond, Va.; L. B. Manville, vice-president, Norfolk, Va.; Walter C. Mercer, secretary-treasurer, Richmond, Va.

MISCELLANEOUS CONSTRUCTION

Ala., Mobile.—Dock Shed.—City awarded contract to McClintic-Marshall Construction Co., Pittsburgh, Pa., at \$49,780 to construct superstructure of steel shed on municipal wharves; length 1240 feet; contract for concrete foundations on piling awarded to Jett Bros. Construction Co. of Mobile at \$4587.25; Wright Smith, City Engineer. (Call for bids lately noted.)

Ala., Mobile.—Docks.—Mobile Terminal Railway Co., John T. Cochrane, president, awarded contract to Jett Bros. Construction Co. of Mobile to construct docks between two dredged slips at Farmers Island; contract for dredging to be let separately. (Recently mentioned.)

Fla., Bradenton.—Wharf.—Mr. Hornbeck awarded contract to Manatee Construction & Transportation Co. of Bradenton to construct private wharf 500 feet long.

Fla., Tampa.—Docks.—Henderson Land & Dock Co., capital stock \$50,000, incorporated; L. W. Weedon, president; G. C. Warren, first vice-president; G. A. Henderson, second vice-president; Amos L. Harris, secretary-treasurer.

La., New Orleans.—Levee.—Levee Board awarded contract to Stewart & McGinnis to construct levee at Cut-off Bayou in Rapides Parish; 65,000 cubic yards.

La., New Orleans.—Docks.—New Orleans, Fort Jackson & Grand Isle Railroad, Otto Maler, president, petitioned Dock Board for authority to construct docks and landings.

Md., Port Covington (not a postoffice).—Dredging.—Western Maryland Railway awarded contract to Sanford & Brooks Company, 24 Commerce St., Baltimore, Md., for dredging at Port Covington piers; present average depth of water is about 10 feet; contract requires that depth of 31 feet be provided each side of full length of new pier, from end of pier to regular channel in Patapsco River, and intervening space between two Western Maryland channels.

Mo., Kansas City.—Flood Protection.—Louis R. Ash, City Engineer, states plans and specifications are being drawn for improvement of Missouri River front and for dike to protect East Bottoms from flood; improvement involves about 1 1/4 miles bank revetment along harbor line, 2 miles permeable pile dike and over 3 miles levee; estimated total cost, \$650,000; \$105,000 of this to be borne by general government; contemplated that asking of bids will follow Supreme Court decision on legal points. (Previously noted.)

Tex., Galveston.—Pier Shed.—Galveston Wharf Co. awarded contract to James Stewart & Co., St. Louis, Mo., to construct shed on Pier 40; fireproof; 1200x400 feet; covered area 240,000 square feet; outside walls of steel reinforced concrete; roof of concrete covered with asphalt composition; fire or division walls 13 inches thick; foundation, 1500 creosoted piles; electric lighting, all wires in conduits; require 6000 cubic yards concrete, 8000 barrels cement and 300 tons steel; estimated cost, \$75,000; will also construct 1200-foot apron of creosoted piling for railroad tracks from car to ship; Pier 41 will be bulkheaded with creosoted timber, making total width 416 feet; slip will be dredged to 30 feet; bulkhead will be braced at short intervals by steel tie rods; bulkhead and apron will require 2,500,000 feet of creosoted lumber and piling, with 400 tons of steel chains, bolts, etc.

MISCELLANEOUS ENTERPRISES

Ark., Hope.—Bridge Contracting.—Hope Bridge and Iron Works incorporated by Taylor H. Allen, Albert F. Annon and H. J. Price.

Ga., Cordele.—Garbage Incinerator.—City contemplates installing garbage incinerator; population 10,000; T. J. McArthur, city physician. (See "Machinery Wanted.")

Ga., St. Marys.—River Transportation.—St. Marys River Steamboat Co., capital stock \$16,000, incorporated by J. R. Bachlott, John Richardson and M. Register of St. Marys, S. Chadwick and G. T. Yates of Fernandina, Fla.

Ky., Louisville.—Contracting.—Lutz & Schmidt, capital stock \$5000, incorporated by Frank D. Schmidt, Francis T. Schmidt and John Lutz.

Ky., Nicholasville.—Printing.—Argent Printing Co., capital stock \$2000, incorporated by J. L. Sewers, Pearl Cox and Jesse Cobb.

La., New Orleans.—Laundry.—Dixie Laundry Co., A. S. Picard, president, will erect laundry; erect stables in rear; cost \$50,000.

La., New Orleans.—Printing.—Robert H. True Company, capital stock \$20,000, incorporated; Robert H. True, president; James B.

True, vice-president; Robert B. Mayfield, secretary-treasurer.

Miss., Greenwood.—Laundry.—Delta Laundry (Samuel J. Stein interested) will erect and equip laundry; 40x110-foot fireproof building; plans by Eely & Weller, Memphis, Tenn.; contractor, C. W. Chinlith; open machinery bids about July 1. (See "Machinery Wanted.")

Mo., Buncheon.—Grain Elevator.—Farmers' Elevator Co., capital stock \$7500, incorporated by Theodore Brandes, A. C. Brandes and William Brokamp.

Mo., Harris.—Grain Elevator.—Farmers' Elevator & Supply Co., Virgil Hickman, president, Princeton, Mo., will erect elevator of 20,000 bushels capacity; bids opened at once. (See "Princeton, Mo." and "Machinery Wanted.")

Mo., Newtown.—Grain Elevator.—Farmers' Elevator & Supply Co., Virgil Hickman, president, Princeton, Mo., will erect elevator of 20,000 bushels capacity; bids opened at once. (See "Princeton, Mo." and "Machinery Wanted.")

Mo., Mercer.—Grain Elevator.—Farmers' Elevator & Supply Co., Virgil Hickman, president, Princeton, Mo., will erect elevator of 20,000 bushels capacity; bids opened at once. (See "Princeton, Mo." and "Machinery Wanted.")

Mo., Princeton.—Grain Elevator.—Farmers' Elevator & Supply Co. (recently noted) incorporated with \$50,000 capital stock) will erect elevator at Princeton of 25,000 bushels capacity, and one each at Mercer, Newtown and Harris, Mo.; each capacity 20,000 bushels; bids opened at once; Virgil Hickman, president; C. E. Hickman, secretary; H. Hickman, treasurer. (See "Machinery Wanted.")

N. C., Charlotte.—Publishing.—News Publishing Co., W. C. Dowd, president, is having plans prepared by J. M. McMichael, Charlotte, for newspaper plant; reinforced concrete; fireproof construction; brick; steam heat; electric lighting; cost \$15,000. (Previously noted.)

N. C., Burlington.—Construction.—Dixie Construction Co., capital stock \$50,000, organized by W. N. Thompson, Abbe Bros. and others.

N. C., Newbern.—Printing.—E. J. Land Printing Co., capital stock \$25,000, incorporated by E. J. Land, H. K. Land, R. W. Haywood and Adolph Roberts.

N. C., Raleigh.—Amusement Park.—Electric Park Amusement Co., capital stock \$50,000, incorporated by D. F. Fort, Jr., Daniel Allen and R. E. Barnes.

Okla., Putnam.—Incubating Plant.—Joseph Vogell, Oklahoma City, Okla., purchased 20 acres for \$4000 as site for incubating plant and brooder-house; 25x200 feet; electric plant and hot-water heating plant; George Vogell, Oklahoma City, will be manager.

Okla., Gore.—Printing.—Citizens' Printing Co. incorporated by Mattie M. Cordon, Seth K. Cordon and G. B. Foreman.

Okla., Oklahoma City.—Construction.—Foster Construction Co. incorporated by R. T. Foster, John C. Foster, H. E. Wiles and Charles T. Derr.

Okla., Sand Springs, P. O. Tulsa.—Construction, etc.—Sand Springs Crusher & Construction Co., capital stock \$5000, incorporated by Virgil Hicks, H. H. McFann and R. B. Morgan, all of Sapulpa, Okla.

S. C., Columbia.—Laundry.—Columbia Laundry Co. has plans by J. H. Sams, Carolina National Bank Bldg., Columbia, for laundry; 50x125 feet; cost \$7000; machinery contracts let. (Recently noted.)

Tex., Austin.—Construction.—Morey-Faulhaber Construction Co. of Texas, capital stock \$50,000, incorporated by Richard Morey, E. A. Faulhaber, Frank Donze and others.

Tex., Rockport.—Laundry.—J. H. Bell and H. C. Shaner, San Antonio, Tex., will build steam laundry. (See "Ice and Cold-Storage Plants.")

Va., Lynchburg.—Stone Crushing.—Lynchburg Stone Co. incorporated; J. T. Diuguid, president; F. S. Diuguid, secretary; will operate stone-crushing machinery of 100 to 300 tons daily capacity; no building.

Va., Lynchburg.—Construction.—Meem & Kinnler, capital stock \$15,000, incorporated with J. L. Meem president, Randolph Harrison vice-president, C. L. Kinnler secretary-treasurer; general road contractors. (See "Machinery Wanted.")

W. Va., Green Spring.—Tie Creosoting.—Baltimore & Ohio R. R., F. L. Stuart, chief engineer, Baltimore, Md., will establish tie-creosoting plant; reported that J. J. Walsh & Sons, 1533 Maryland Ave., Baltimore, Md., have contract for erection.

W. Va., Morgantown.—Printing.—Acme

Press, capital stock \$25,000, incorporated by Henry S. Green, Russell L. Morris, Robert R. Green, William R. Ludwig and John A. Purinton.

MISCELLANEOUS FACTORIES

Ala., Birmingham.—Medicine.—Birmingham Medical Co., capital stock \$100,000, incorporated; E. B. Sims, president; John W. Miller, secretary-treasurer.

Ala., Foley.—Brooms.—Otto J. Zipperer will establish broom factory.

Ala., Monroeville.—Turpentine.—B. F. Wiggins plans to establish turpentine distillery, utilizing stumps and fat logs; has not bought machinery. (See "Machinery Wanted.")

D. C., Washington.—Tabulating Machine.—Spicer Tabulating Machine Co. incorporated with \$300,000 capital stock by Charles W. Spicer, 3248 38th St. N. W.; James E. Hutchinson, Jr., and Enoch Edmondston, Jr., all of Washington.

D. C., Washington.—W. F. Naah (Naah & Co., 500 Center Market) and Christian J. Gockeler (1745 Q St. N. W.) will erect brick factory at 321 L St. N. W.; cost \$3000.

Ga., Augusta.—Gas.—Gas Light Co. will improve gas plant; awarded contract to United Gas Improvement Co., Philadelphia, Pa., for oil-gas plant with capacity of 1,000,000 cubic feet gas daily; will also install other machinery, including boiler plant purchased from Lombard Iron Works of Augusta; remodel and enlarge building; James C. M. Lucas of J. C. M. Lucas Company, 1307 Continental Bldg., Baltimore, Md., is president; Frederick H. Wagner, 1429 Madison Ave., Baltimore, Md., is consulting engineer.

Ky., Dawson Springs.—Salts, etc.—Dawson Salts & Water Co., capital stock \$15,000, incorporated by W. I. Hamby, H. G. Hamby, A. E. Orton and others.

Ky., Mount Sterling.—Tobacco.—Burley Tobacco Society, Clarence Lebus, secretary, Lexington, Ky., will build salesroom 150x300 feet and install redrying and prizing plant; latter to have hydraulic presses; also construct roadway and make other improvements; proposes to handle 300,000 pounds daily; improvements to cost \$60,000.

La., Abbeville.—Sugar.—Vermillion Sugar Planting & Manufacturing Co., capital stock \$100,000, incorporated; awarded contract to Bancroft, Ross & Sinclair of New Orleans, La., to erect sugar refinery costing about \$300,000; J. C. Le Bourgeois, president; R. G. Bush, vice-president; E. H. Cook, secretary; R. G. Bush, Jr., treasurer, all of New Orleans.

La., Breaux Bridge.—Sugar.—Cecilia Sugar Co., capital stock \$250,000, organized by A. G. Broussard of Breaux Bridge and F. E. Voorhies of Lafayette, La.; will erect sugar mill with daily capacity of 600 to 700 tons cane; will purchase 2000 acres sugar land in St. Martin parish.

Md., Baltimore.—Candy.—Lucy Candy Co., 1111 Laurens St., incorporated with \$15,000 capital stock by W. T. Milton Lucy, Walter L. Watson and Lucas M. Bunnell.

Md., Baltimore.—Novelties.—Harrison Manufacturing Co., capital stock \$5000, incorporated by Percy Harrison (522 S. Kenwood Ave.), Sigvard Svenson and Harry Bromwell.

Md., Baltimore.—Hydroplanes.—Rex Smith Aeroplane Co., main office, Victor Bldg., Washington, D. C., is interested in establishing plant to manufacture hydroplanes for which it controls basic patents; location not determined; must be on water front; present factory, etc., at College Park, Md. (Recently noted.)

Md., Baltimore.—Drugs and Chemicals.—Bennett Drug & Chemical Co., capital stock \$5000, incorporated by Ross W. Brewer (1912 Mosher St.), Stephen J. Birkhead, Frank C. Pearson and I. Francis Hock.

Miss., Anding.—Syrup.—R. E. Gary and associates will establish syrup mill.

Miss., Eden.—Molasses.—Doyle Seward will establish mill with daily capacity of 800 gallons of sorghum syrup; cost of plant \$4000; material and equipment purchased.

Miss., Hattiesburg.—Turpentine, etc.—Hattiesburg Wood Reduction Co. incorporated with \$50,000 capital stock by J. H. Castoas of Laine, Miss.; T. S. Jackson and G. L. Hawkins of Hattiesburg. (Details of Mr. Castoas's plans recently reported.)

Mo., Kansas City.—Blakeslee Manufacturing Co., capital stock \$5000, incorporated by U. H. Hosterman, C. F. Blakeslee, J. G. Hosterman, M. R. Blakeslee and J. D. Schwartz.

Miss., Meridian.—Bottling.—Gay-Old Bottling Co. organized by Sam Greenwald, Joe McCain and C. L. Gray.

Mo., Springfield.—Shoes.—Upham Shoe Co., capital stock \$125,000, incorporated by Charles B. Harry J. and M. B. Upham.

Mo., St. Louis—Gas.—St. Louis County Gas Co., capital stock \$100,000, incorporated; has franchise to furnish gas to Ferguson and proposes to extend system to Ferguson, Vinita Park, Council Grove and Ashby place; A. C. Einstein, president; John H. Drabell, vice-president; S. H. Wallace, secretary; P. F. Schroers, treasurer.

Mo., St. Louis—Brewery.—Anheuser-Busch Brewing Association will erect proposed circular brick building; 80 feet diameter, with reinforced concrete dome and 1100 feet brick wall; estimated cost \$12,000; Edward Flad & Co., Fullerton Bldg., St. Louis, prepared plans and will receive bids.

Mo., St. Louis—Paper Products.—American Paper Products Co. will improve plant at 201-203 Bremen Ave.; cost \$10,000.

Mo., St. Louis—Wood Preserver.—Royal Wood Preserver Co., capital stock \$10,000, incorporated by H. H. Surmeyer, Joseph J. Long and H. Surmeyer.

Mo., St. Louis—Bonner Miller Manufacturing Co., capital stock \$100,000, incorporated by Bonner Miller, J. A. Lewis and J. W. Bell.

N. C., Henderson—Mattresses.—Cotton Fiber & Mattress Co., incorporated with \$50,000 capital stock by John D. Cooper, Edwin B. Taylor, S. S. Parham, W. A. Hunt and J. B. Owen; will erect factory and warehouses; brick mill and ordinary construction; Edwin B. Taylor, general manager.

N. C., Shelby—Bottling.—Shelby Coca-Cola Bottling Co., capital stock \$5000, incorporated by J. F. Goodman, J. T. Honeycutt and Addie Goodman.

N. C., Wilmington—Winery.—Sol Bear & Co. awarded contract to W. P. Rose, Goldsboro, N. C., to build winery; three stories; brick; 75x150 feet; steel frame; concrete floors; cost \$30,000; plans by B. H. Stephens, Wilmington. (Recently mentioned.)

Okl., Ponca—Glass.—United Sash & Door Co., F. D. Munn, secretary, Wichita, Kans., will erect glass factory and glazing plant; glass factory to be two stories; 80x300 feet; cost \$75,000.

S. C., Charleston—Lime and Cement.—Southeastern Lime & Cement Co., D. Van Smith, president, increased capital stock from \$8000 to \$190,000.

S. C., Greenville—Bakery.—Fred W. Greene Co., capital stock \$10,000, incorporated by Fred W. Greene of Greenville and J. J. Dendy, Laurens, S. C.

Tenn., Chattanooga—Gas.—A. Kleitz and associates, Chicago, Ill., petitioned City Council for 30-year gas franchise.

Tenn., Johnson City—Gas.—A. P. Kleitz and associates, Chicago, Ill., contemplate, it is reported, establishment of gas plant.

Tenn., Knoxville—Marble.—Tennessee Marble Works, capital stock \$5000, incorporated by F. W. Allen, Arthur Cox, J. W. King and others; will continue marble works established by Mr. Allen.

Tenn., Memphis—Biscuits.—National Biscuit Co., A. W. Green, president, New York, is reported as to improve plant at cost of \$10,000.

Tenn., Memphis—Candy.—Chicasaw Candy Co., P. F. Crenshaw, manager, awarded contract to McKnight & Merz, Memphis, to erect fireproof concrete building; 51x100 feet; cost \$17,000; plans by G. M. Shaw, Memphis; daily capacity, 7500 pounds of candy. (Recently noted.)

Tenn., Nashville—Cloaks and Suits.—Manhattan Cloak & Suit Co., capital stock \$50,000, incorporated by Alex. Weinbaum, Harris Solinsky, David Lowenheim and others.

Tenn., Paris—Tobacco, etc.—J. T. Gatlin awarded contract to erect two-story building on Washington St.; lower floor for warehouse; upper floor for tobacco factory and newspaper plant.

Tex., Houston—Coffee Roasting.—Guatemala Coffee Co. awarded contract to Walter Cook of Houston to erect coffee-roasting plant; three stories; 45x90 feet; pressed brick; electric elevator; also erect warehouse; 55x60 feet; pressed brick; fireproof compartments; freight elevator to serve both buildings; total cost \$25,000; Green & Flager of Houston are architects.

Tex., Houston—Candy.—Texas Candy Co., capital stock \$10,000, incorporated by Henry Alexander, F. P. Hood and Jonathan Lane.

Tex., Houston—Extracts and Spices.—Texas Extract & Spice Co., capital stock \$4000, incorporated by T. F. Pappé, J. P. Byrne and Isaac E. Harris.

Tex., Houston—Gas.—Houston Gas & Fuel Co. increased capital stock from \$1,000,000 to \$2,000,000.

Tex., Palestine—Novelties.—Novelty Manufacturing Co. organized with J. T. Burnett, president and sales manager; H. C. Jameson, secretary-treasurer; Fred Neuberger, vice-

president-superintendent; rented portion of Wainwright Bldg. and will install machinery for manufacturing utility articles, especially iceless refrigerator and milk cooler. (Recently reported incorporated with \$10,000 capital stock.)

Tex., Port Lavaca.—Port Lavaca Manufacturing Co., capital stock \$50,000, incorporated by W. E. Shell, Willett Wilson, H. C. Innis and others.

Tex., Houston—Rice Mill.—Southwestern Rice Co., H. C. Schirmer, president, 407 Hill St., is proceeding with previously-noted rebuilding plans; 51x276-foot warehouse; 48x51-foot brick mill building; will install machinery, including transmission machinery; power plants of gasoline engines ordered; mills 500 sacks rice daily. (See "Machinery Wanted.")

Tex., Stockdale—Mattresses.—Jenkins & Warren will build mattress factory; daily capacity, 10 to 12 cotton mattresses.

Tex., Victoria—Brewery.—Victoria Brewing Association organized with \$50,000 capital stock by Alfred C. Jackson of San Antonio, Tex., and others; purchased 4½ acres as site for brewery.

Tex., Waco—Bottling.—Waco Coca-Cola Bottling Co., capital stock \$21,000, incorporated by H. E. Kelley, J. A. Echols and C. I. Taylor.

Va., Hampton—Bakery.—Richardson Grocery Co., W. W. Richardson, president, awarded contract to R. H. Richardson & Son, Hampton, to erect bakery; steam oven; cost, including machinery, \$5000.

Va., Plasterco—Gypsum Products.—United States Gypsum Co., Chicago, Ill., will expend, it is reported, \$100,000 to erect additional buildings and install new machinery.

W. Va., Charleston—Vulcanizers.—Comstock Vulcanizer Co., capital stock \$5000, incorporated by Edward A. Erb, John Y. Arter, H. W. Comstock, H. G. Thayer and W. F. Comstock.

MOTORS AND GARAGES

Ala., Mobile—Automobiles.—Cadillac Motor Co., incorporated with \$20,000 capital stock; C. W. Harrington, president and general manager; L. G. Adams, vice-president; M. M. Harrington, secretary-treasurer.

Ark., Little Rock—Moorhead Wright is having plans prepared by George R. Mann, Little Rock, for garage on Pulaski Heights; stone; cost \$12,000.

Fla., Key West.—J. B. Wofford of Miami, Fla., will erect garage and livery stable on Simonton St.; concrete.

Ga., Atlanta—Henry H. Schaul will erect garage for Buick Motor Co., southeast corner Peachtree and Harris Sts.; four stories; concrete; cost \$30,000.

Ga., Atlanta—Automobile Trucks.—Van Winkle Gin & Machine Co. is designing new plant for manufacture of motor trucks; models are 1500 pounds, 1½, 2½ and 3½ tons capacity. (Under "Foundry and Machine Plants" was recently noted having sold machinery plant and to continue manufacture of motor trucks.)

Ga., Macon—Garage.—Jesse Hall will erect additional story to garage for Wade & McCord on 1st St.; cost \$7500.

Ga., Macon—Garage.—Harold Banking & Savings Co., 416 2d St., will open bids in 30 to 45 days to erect garage recently noted; 52½x150 feet; two stories and basement; mill construction; hot-air heat; electric elevator; cost \$15,000; plans by F. R. Happ, Fourth National Bank Bldg., Macon; architect may be addressed. (See "Machinery Wanted.")

Mo., St. Louis—Showrooms.—J. L. Wees, St. Louis, is preparing plans for automobile showrooms at Forest Park Highlands; 60x280 feet; roof garden, etc.; cost \$12,000.

N. C., E. W. Grove Park (not a postoffice)—Automobiles.—Grove Park Motor Car Co. incorporated with \$20,000 capital stock by E. W. Grove, St. Louis, Mo.; W. F. Randolph and John S. Adams, both of Asheville, N. C.

N. C., Greensboro—Garage.—American Motor Co., A. C. Bonkemyer, secretary, Box 119, Greensboro, will open bids about August 1 to erect garage; 47x75 feet; fireproof construction; cost \$5000; Mr. Bonkemyer recently noted as purchasing Hopkins building and to erect addition. (See "Machinery Wanted.")

S. C., Charleston—Robinson Automobile Co., W. B. Wilbur, secretary, will meet April 2 to increase capital stock to \$20,000.

Tex., Bryan—Automobile Supplies.—Dr. J. W. Howell has plans for garage and automobile supply building on Main St.; structure leased by Johnson & Rhode.

Tex., Houston—Automobiles.—Twiford Automobile Manufacturing Co. incorporated with \$400,000 capital stock to manufacture trucks and passenger automobiles under

Twiford patents; acquired Commercial Car Co. at South Houston and is installing additional machinery; Monta J. Moore is president. (Organization of company and purchase of 30 acres of land with machine shop, etc., recently noted.)

RAILWAY SHOPS, TERMINALS, ROUNDHOUSES, ETC.

La., New Orleans.—New Orleans Terminal Co. (Frisco and Southern railway systems) appropriated \$1,000,000 for improvements as follows: Complete Chalmette slips; replace Chalmette wharf with treated timbers; install grain elevator, carriers and conveyors for 500,000 bushels capacity; build warehouses and cotton sheds; improve roundhouse and install additional machinery in shops and repair sheds; lay team tracks with roadways and approaches; A. D. Lightner, president, wires Manufacturers Record confirming foregoing statement.

Tex., Marshall.—Texas & Pacific Railway, C. H. Chamberlin, chief engineer, Dallas, Tex., will erect concrete oilhouse to replace burned structure and contemplates building 30-stall concrete roundhouse.

Tex., Rockport.—San Antonio, Rockport & Mexican Railway, Robert Pattison, representative, San Antonio, Tex., awarded contract to Shattuck-Endinger Company of Los Angeles and San Francisco, Cal., to construct docks at Harbor Island. (Recently reported to construct docks, warehouses and terminals at cost of \$250,000.)

Va., Norfolk.—Virginia Railway & Power Co. awarded contract at \$33,114 to J. H. Pierce of Norfolk to erect roundhouse; one story; 100x100 feet; office building, car barns, etc. (See "Miscellaneous Structures.")

ROAD AND STREET WORK

Ala., Bay Minette.—Bay Minette Land Co. awarded contract to Bay Minette Concrete Co., Bay Minette, Ala., for constructing several blocks of sidewalks.

Ala., Birmingham.—City awarded contracts for 50,000 square yards street paving; McCartin Paving & Construction Co., 30,000 square yards with sheet asphalt; Southern Asphalt Construction Co., 15,000 yards with asphalt-concrete; C. M. Burkhalter, 5000 yards with binder macadam; contractors all of Birmingham; cost about \$250,000.

Ala., Brewton.—City will let contract for paving cement sidewalks on certain streets. Address The Mayor.

Ala., Camden.—Wilcox county postponed date of opening bids from March 26 (latest stated) to April 30 for grading, draining and surfacing with gravel or sandstone 4 miles of road; cost \$8000; W. S. Keller, State Highway Engineer. (See "Machinery Wanted.")

Ala., Oxford.—City will pave streets. Address The Mayor.

Ark., Helena.—Paving district No. 9 will pave 10,000 square yards with five-inch concrete foundation, place 6000 linear feet curb and gutter, grade 1000 cubic yards, etc.; bids received until April 17; Ed. D. Ehrman, secretary of district. (See "Machinery Wanted.")

Ark., Texarkana.—City will pave streets in improvement district No. 13; bids opened April 2; Fortune & Mayden, engineers, Motz Bldg., Texarkana; James F. Black, secretary.

Fla., Kissimmee.—City's plans for street improvements include 26,000 yards of brick paving; city's portion, \$35,000; balance paid by property-holders; Jenkins & Woodin, engineers in charge; contract recently noted awarded to Alabama Paving Co., First National Bank Bldg., Birmingham, Ala.

Ga., Bainbridge.—City will construct 22,000 square yards street paving with necessary drainage and granite curb; vitrified brick, wood block, bitulithic, granite and asphalt considered; H. S. Jaudon Engineering Co., Atlanta and Savannah, Ga., consulting engineer; J. W. Callahan, Mayor. (See "Machinery Wanted.")

Ga., Brunswick.—City will grade and pave with vitrified brick Monk, Gloucester, F and Oglethorpe Sts.; 11,000 square yards paving and 1700 linear feet curbing; bids received until April 15; J. L. Zachry, City Engineer. (See "Machinery Wanted.")

Ga., Buford.—City votes April 13 on \$10,000 bond issue for paving. Address The Mayor.

Ky., Jackson.—Town will pave certain streets with macadam or telford; about 13,000 square yards; bids received until April 20; W. S. Canning, City Engineer. (See "Machinery Wanted.")

Ky., Louisville.—Board of Public Works opens bids 2 P. M. April 12 for vitrified block paving on M, 27th, Garfield, Boyle and

other streets; require 710,000 blocks; estimated cost \$52,000.

La., Crowley.—City invites bids until April 16 for paving Parkerson Ave.; bids on vitrified brick, creosoted blocks, bitulithic, asphalt and cement will be considered. Address The Mayor. (Recently mentioned.)

La., Shreveport.—Caddo Parish Police Jury will expend \$101,000 to construct 17 miles gravel roads; C. E. Bullen, engineer in charge; contract recently noted awarded to Texas Grading Co., Houston, Tex.; equipment purchased.

Md., Easton.—City will pave streets; Clyde Potts, consulting engineer, New York, prepared plans; W. E. Shannahan, chairman Street Commission; Martin M. Higgins, Mayor; will construct 3 to 5 miles of pavement, including curbing and gutters; amount available, \$30,000 to \$35,000; character of construction and date of opening bids not determined.

Miss., Clarksdale.—Coahoma County Supervisors will issue \$50,000 bonds for road and bridge construction.

Mo., Greenfield.—Center and Washington townships of Dade county voted \$47,000 bond issue for road improvements. Address County Commissioners.

Mo., Mt. Vernon.—Mt. Vernon township of Lawrence county voted \$50,000 bond issue for road construction; will build 90 miles of permanent roads; probable cost, \$50,000; date of opening bids not set; J. A. Cochran, Commissioner.

Mo., Sedalia.—Sedalia Special Road District votes April 20 on \$200,000 bond issue to construct to district limits 16 roads radiating from Sedalia; rock or gravel; 52 miles. Address District Commissioners.

N. C., Greensboro.—City will vote on \$30,000 bond issue for street paving. Address The Mayor.

S. C., Greenville.—City awarded contract to J. R. Lawrence to pave walk through City Park on North Main St.; 1300 feet long and 6 feet wide; contract also calls for construction of concrete bridge over Academy Branch.

Tenn., Charlotte.—Dickson County Turnpike Co. will construct 8 miles of road from Charlotte to Dickson.

Tenn., Knoxville.—Bids invited on construction of 500 square yards concrete sidewalks and 1100 feet concrete curbing in Maplehurst Park, West Hill Ave. Address A. F. Sanford, Journal and Tribune Office. (See "Machinery Wanted.")

Tenn., Memphis.—City awarded contract to Memphis Asphalt & Paving Co. of Memphis at \$7121.72 to pave 4th St. from Union to Court Ave.

Tenn., Springfield.—Robertson county awarded contract to Freeman & Robbins to construct 150 miles of limestone macadam roads; present cost, \$150,000; amount available within year, \$300,000, making total of \$450,000 available for road improvements; R. O. Gailaher, engineer in charge. (Bond issue of \$450,000 recently noted.)

Tex., Amarillo.—City will pave streets and extend sewer system; issued \$35,000 of bonds. Address The Mayor.

Tex., Corpus Christi.—City voted \$150,000 bond issue for street paving; H. A. Peabody, engineer in charge; Clark Pease, Mayor. (Recently mentioned.)

Tex., San Angelo.—J. D. Hassell, Mayor, states \$125,000 is available for street paving; J. J. Goodfellow, engineer in charge; date of opening bids not decided. (A bond issue recently noted.)

Tex., Sweetwater.—City will construct 66,000 square yards of water-bound macadam and 4000 square yards of asphalt macadam street paving; A. O. Dreyer, City Engineer; L. S. Polk, City Secretary; bids received until April 22. (See "Machinery Wanted.")

Tex., Taylor.—City will vote April 30 on \$25,000 bond issue for paving main streets; C. M. Still, Mayor. (Recently mentioned.)

Va., Cambria.—City will vote bond issue for street paving, etc. Address The Mayor.

Va., Culpeper.—W. E. Coans, County Clerk, states Jefferson district of Culpeper county will vote April 30 on \$50,000 bond issue for macadam roads. (Catalpa district recently noted to vote \$120,000 for macadam road construction on same date.)

Va., Lynchburg.—City will pave certain streets; bids received until noon April 13 at office of H. L. Shaner, City Engineer; 30,000 cubic yards excavating, 21,000 linear feet concrete curb, 37,000 square yards bituminous macadam pavement. (See "Machinery Wanted.")

Va., Norfolk.—City will lay 1700 square yards asphalt paving on Westover Ave. from

Colley to Colonial Ave.; bids received until April 8; W. T. Brooke, City Engineer. (See "Machinery Wanted.")

Va., Richmond.—Board of Aldermen approved resolution to pave Grove Ave. west of Lombardy St. with asphalt blocks; appropriation \$25,000; Charles E. Bolling, City Engineer.

Va., Richmond.—Special committee, R. B. Allport, president, recommends organization of Richmond-Washington Memorial Highway Association with \$150,000 maximum capital stock to construct road from Richmond to Washington via Fredericksburg. (Recently mentioned.)

SEWER CONSTRUCTION

Ala., Oxford.—City awarded contract to J. B. McCrary Company, Atlanta, Ga., to construct sewer system; issued \$12,000 of bonds. (Recently mentioned.)

Fla., Fort Meade.—City votes April 16 on bond issue of \$39,000 for sewer construction and water-works; R. C. McClellan, Mayor.

La., Morgan City.—City has engaged X. A. Kramer, Magnolia, Miss., as consulting engineer for sewer system; M. D. Shannon, Mayor. Address engineer. (Recently noted to have purchased site for sewerage plant.)

Md., Baltimore.—City receives bids until April 10 for constructing storm-water drains under contract No. 20; plans on file in office of Calvin W. Hendrick, chief engineer Sewerage Commission, 904 American Bldg.; to include 1025 linear feet terra-cotta pipe drains, 1650 linear feet inlet connections, 58 inlets, 29 manholes, etc.; receives proposals until April 17 for constructing sanitary lateral sewers in district Nos. 18 and 40-B; plans on file with Mr. Hendrick; to include 35,750 linear feet vitrified pipe sewers, 21,000 linear feet vitrified pipe house connections, 33,000 linear feet vitrified pipe sewers, 20,000 linear feet vitrified pipe house connections, etc. (See "Machinery Wanted.")

Mo., Springfield.—City receive bids until April 4 to construct southern and northern disposal works; former to treat 4,000,000 gallons daily and embrace construction of grit chamber, 2 Imhoff tanks, 5 sprinkling filters equipped with mechanical distributors, 2 sludge beds and final settling basin; latter is designed to treat 500,000 gallons daily and similar to southern plant, except that sprinkling nozzles are substituted for mechanical distributors; Alexander Potter, consulting engineer, 114 Liberty St., New York; Robert E. Lee, Mayor. (Recently mentioned.)

N. C., Greensboro.—City will vote on \$30,000 bond issue for sewer system. Address The Mayor.

N. C., Spencer.—City awarded contract to J. B. McCrary Company, Atlanta, Ga., to construct two-mile extension of sewer system; reported cost, \$10,000.

Tenn., Tullahoma.—City voted \$25,000 bond issue for construction of sewer system; James F. Daniel, Recorder. (Recently mentioned.)

Tex., Amarillo.—City will extend sewer system and improve streets; \$25,000 bonds issued. Address The Mayor.

TELEPHONE SYSTEMS

Ga., Macon.—Southern Bell Telephone & Telegraph Co. (main offices, Atlanta, Ga.) will improve telephone system; cost \$160,000.

Ky., Ashland.—Ashland Telephone Co., capital stock \$125,000, incorporated by W. B. Seaton, Charles F. Weaver, Charles Russell and others.

Miss., Laurel.—Cumberland Telephone & Telegraph Co., Nashville, Tenn., will rebuild telephone exchange and install flashlight system; cost \$40,000. Western Electric Co., Hawthorn, Ill., has contract to install flashlight system.

N. C., Arnold.—Enterprise Telephone Co., capital stock \$5000, incorporated by J. A. Jordan, Junius Hill and others.

N. C., Fulp.—Town Fork Telephone Co., authorized capital \$51,000, incorporated by Chas. Bodenheimer, E. Fulp and others.

Okl., Oologah.—Oologah Telephone Co. incorporated by M. O. Swan, E. F. Young and F. E. Carlstrom.

S. C., Spartanburg.—Special correspondent wires Manufacturers Record: "Railroad Commission has application from Southern Bell Telephone & Telegraph Co., Atlanta, Ga., to increase rates to justify repairing system with common battery central energy multiple telephone equipment, placing wire underground and erecting exchange building; cost \$150,000."

Tenn., Bexar.—Bexar Telephone Co. organized to construct telephone system; J. A. Bradford, president; J. W. Webb, secretary.

TEXTILE MILLS

Ga., Columbus.—Cotton Cloth.—Bibb Manufacturing Co. will build four-story 100x212-foot addition costing \$50,000, and install machinery for weaving sea-island cotton.

N. C., Bessemer City.—Cotton Products.—Harborough Manufacturing Co. is reported as to build large cotton mill.

N. C., Charlotte.—Cotton Cloth.—Highland Park Manufacturing Co. is reported as to build 100-foot extension to mill and add 7000 spindles.

N. C., Charlotte.—Cotton Yarns.—Charles W. Johnson, president of Highland Park Manufacturing Co., will build 5000-spindle mill; not finally decided whether to manufacture fine or coarse yarns.

N. C., Durham.—Hosier.—Durham Hosier Mills wires Manufacturers Record: "Meeting of stockholders called for April 8 to vote on increasing common stock \$250,000 (now \$850,000) and increasing preferred stock \$500,000 (now \$150,000); improvements will be made at once to mills Nos. 1, 2, 4 and 5." Immediate improvements planned include following: \$70,000 at Durham; \$60,000 at High Point; \$60,000 at Chapel Hill; \$10,000 at Goldsboro.

N. C., Graham.—Cotton Cloth.—L. Banks Holt Manufacturing Co. is reported as planning important improvements to carding and spinning departments.

N. C., Marion.—Cotton Cloth.—Marion Manufacturing Co. will build three-story 100x132-foot brick addition costing \$25,000 to \$30,000 and install 15,000 spindles with 300 looms and accompanying machinery costing \$150,000 to \$200,000; opening building bids at once; machinery contracts closed except for low-pressure engine, boilers, belting, etc.; J. E. Sirrine, Greenville, S. C., engineer-architect in charge. (See "Machinery Wanted.")

N. C., Oxford.—Carpets.—H. M. Shaw contemplates installing equipment to manufacture carpet for buggy bottoms; has hydro-electric power. (See "Machinery Wanted.")

S. C., Batesburg.—Shirting, etc.—Middleburg Mills has awarded contracts, it is reported, for increasing equipment 50 per cent.; now has 723 spindles, 310 looms, etc.

S. C., Darlington.—Print Cloth, etc.—Darlington Manufacturing Co. is reported as contemplating installation of automatic looms in place of present old-type looms; has about 1500.

S. C., Easley.—Cotton Cloth.—Glenwood Cotton Mills awarded contract to C. Frank Grandy, Greenville, S. C., to erect three-story 105x342-foot building for mill No. 2. Wick; engine and boiler contracts also awarded; will install, as recently stated, 20,000 spindles and 500 looms; building and machinery to cost \$400,000; engineer architect in charge, J. E. Sirrine of Greenville, S. C. (Later mentioned.)

S. C., Union.—Print Cloths, etc.—Union-Buttall Mills Co. will invest \$150,000 to build and equip steam-power plant as auxiliary to water-power of Broad River; machinery to include six return tubular boilers of 250 horse-power each and 200 pounds pressure, condensers, pump, 210-foot smokestack, etc.; reported all machinery has been ordered; Charles Main, Boston, Mass., engineer in charge.

Tenn., Chattanooga.—Hosiery.—Davis Hosiery Mills increased capital stock from \$250,000 to \$500,000.

Tenn., Harriman.—Woolen Cloth.—Harriman-Riverside Woolen Mills will construct one-story 38x82-foot addition to 40x208-foot building; this and present building repairs to cost \$2500; building contractor, Geo. W. Hood of Harriman; also adding 30x38-foot boiler and 16x30-foot washrooms; has 648 spindles, 36 looms, etc. (Recently reported incorporated, etc.)

Tex., Post City.—Sheeting.—C. W. Post, Battle Creek, Mich., awarded contract for erecting one-story 125x520-foot building; reinforced concrete construction; will install 10,000 spindles, 180 looms, etc.; anticipates building bleaching and electrical power plants, of which details have not been determined; understood textile machinery contracts have been awarded; manager in charge, H. W. Fairbanks, manager of Double U Company, Post City, to whom correspondence should be addressed. (Previously mentioned.)

WATER-POWER DEVELOPMENTS

Ala., Birmingham.—American Radiator Co., 816 S. Michigan Ave., Chicago, Ill., is reported as contemplating construction of hydro-electric plant on Cahaba River, at cost of between \$1,000,000 and \$2,000,000, seven miles from Irondale. (See "Foundry and Machine Plants.")

Ala., Oneonta.—D. S. Martin and associates have purchased machinery and supplies for hydro-electric plant. (Recently noted under "Electric Plants.")

Ark., Berryville.—North Arkansas Power Co., E. H. Ingram, manager, has 216-foot tunnel 70 per cent. completed to cut three-mile bend out of river; will construct 17x300-foot dam this summer; develop 1000 horsepower. (Previously mentioned.)

Ky., Somerset.—Martin J. Insull of Chicago, Ill., president of Louisville & Northern Railway & Lighting Co. of New Albany, Ind., and Louisville (Ky.), New Albany and Chicago associates are reported to have purchased United Water, Light & Traction Co., controlling electric, water and railway systems.

Md., Security.—Frederick & Hagerstown Power Co., incorporated with \$500,000 capital stock by Henry Holzappel, Jr., and Victor M. Cushwa of Hagerstown, Md.; Horatio L. Whitridge of Stevenson, Md., and Edwin W. Poe of Baltimore, Md.; will build hydro-electric plant on Antietam Creek; engineer in charge, P. O. Kellholtz, Continental Bldg., Baltimore. (Later mentioned.)

N. C., Asheville.—Asheville Light & Power Co., \$2,000,000 capital stock, will acquire Asheville Electric Co. properties from Carolina Light & Power Co., Raleigh, N. C.; properties include electric-lighting equipment, 18 miles railway, gas plant and mains, steam-power plant, 300-horse-power water-power plant, car barn, offices, amusement park, etc.; uses electricity from North Carolina Electrical Power Co.'s hydro-electric plant. (New company lately reported incorporated.)

Tenn., Shelbyville.—Duck River Power Co., J. F. Boyd, president, will construct three hydro-electric plants and steam plant; cost over \$100,000; water-power plant partially developed; is estimating to remodel dam and install two new water-wheels during low-water season; also build new penstocks; develop 300 horse-power under 10-foot head; grist-mill building on site will be used as power-house; engineer not engaged; date of opening bids not set; will transmit electricity to Shelbyville, Wartrace and Manchester, Tenn. (Recently noted as increasing capital stock to \$100,000.)

W. Va., Kingwood.—American Water-Works & Guarantee Co., James S. Kuhn, president, Pittsburgh, Pa., submitted proposition to West Penn Traction Co., William S. Kuhn, president, Pittsburgh, for acquiring latter's common stock and incorporating West Penn Traction & Water-Power Co. with \$7,000,000 capital; new company and Cheat River Hydro-Electric Co. controlled by American corporation; special meeting April 24 to vote on proposition; American corporation contemplates constructing hydro-electric plant on Cheat River, which enters Monongahela River near boundaries of West Virginia and Pennsylvania near district (including Pittsburgh) served by West Penn Traction Co. and West Penn Electric Co.; American company has undertaken construction of dam near mouth of Cheat River and is securing lands, water rights, etc.; writes to Manufacturers Record that soon engineers will have plans ready for bids to construct dams, power-houses, etc. (Plans of Kuhn interests for Cheat River developments previously referred to.)

WATER-WORKS

Ark., Morrilton.—Morrilton Water-Works Co.'s contract (recently noted awarded to Roberts Filter Manufacturing Co., Darby, Philadelphia, Pa.) is for 500,000-gallon filtration plant; no buildings or other machinery.

Ark., Hamburg.—City will issue additional bonds to extend water mains and electric-light plant. Address The Mayor.

Fla., Fort Meade.—City votes April 16 on bond issue of \$39,000 for water-works and sewer construction; R. C. McClellan, Mayor.

Fla., Pensacola.—City receives bids until April 16 to construct reinforced concrete reservoir recently mentioned; Whitaker & Hill, consulting engineers, Forsyth Bldg., Atlanta, Ga.; D. Kugelman, chairman water and gas committee. (See "Machinery Wanted.")

Ga., Buford.—City votes April 12 on \$5000 bond issue for water-works. Address The Mayor.

Ky., Murray.—City appointed H. B. Gilbert, T. Beale and L. M. Overby members of committee in charge of constructing water-works; M. D. Holton, City Clerk. (City previously reported to issue \$23,000 of bonds for water and electric-light plants.)

Ky., Shepherdsville.—Domestic Water Co. organized by W. T. Lee, R. L. Troutman and

J. F. Combs; is having plans prepared for water system.

Ky., Carrollton.—City will improve water-works; bids opened April 1; R. L. Bartlett, water-works superintendent; James Gayle, Mayor.

La., Morgan City.—City has engaged X. A. Kramer, Magnolia, Miss., as consulting engineer for water-works; M. D. Shannon, Mayor. Address engineer. (Recently noted to have purchased site for water plant.)

Md., Baltimore.—Board of Awards awarded contract to King-Ganey Company of New York at \$374,884 to construct storage reservoir dam across Gunpowder River at Loch Raven to have capacity of 2,000,000 gallons; Ezra B. Whitman, Water Engineer, City Hall. (Recently mentioned.)

Md., Baltimore.—City awarded contract to David M. Andrew Company, Mount Vernon, N. Y., and 26th St., Baltimore, at \$17,121.35 to repair Mount Royal Pumping Station; Ezra B. Whitman, water engineer, City Hall. (Call for bids lately noted.)

Md., Easton.—Easton Water Co. applied to Public Service Commission for authority to issue \$45,000 of bonds to improve water-works and pay existing indebtedness.

N. C., Bessemer City.—City granted franchise for water-works; water to be pumped from Long Creek to top of Whetstone Mountain. Address The Mayor.

N. C., Clinton.—Town will construct water-works. Address Town Clerk.

N. C., Salisbury.—Southern Railway, R. Herman, chief engineer, Washington, D. C., will install pumping plant at Yadkin River.

N. C., Statesville.—City contemplates installing additional filter at water station. Address The Mayor.

N. C., Spencer.—City is considering construction of water-works; J. B. McCrary Company, Atlanta, Ga., submitted proposition.

Okl., Alva.—City voted \$55,000 water-works bond issue. Address The Mayor.

Okl., Holdenville.—City will extend and improve water-works; specifications on file at office of Willard S. Levan, City Clerk, and are obtainable from consulting engineers, Goodwin & Harper, 920 Scarritt Bldg., Kansas City, Mo.; bids received at clerk's office until 10 A. M. April 13. (See "Machinery Wanted.")

Okl., Idabel.—Idabel Light & Fuel Co. has engaged Nagai Engineering Co., Muskogee, Okla., for extension to water-works. (Bond issue of \$35,000 recently reported voted.)

Okl., Muskogee.—City receives bids until April 9 for furnishing mechanical equipment for water-purification plant and 400-horse-power boiler; E. H. Fleming, Commissioner of Water, Sewers and Lights; Alexander Potter, consulting engineer, 114 Liberty St., New York. (See "Machinery Wanted.")

Okl., Perkins.—City voted \$25,000 bond issue for construction of water-works. Address The Mayor.

Tex., Eagle Lake.—Eagle Lake Water & Light Co., Box 291, Geo. Herder of Weimar, Tex., president (recently noted incorporated with \$15,000 capital stock), takes over water and electric systems owned by Mr. Herder and formerly operated under lease by Eagle Lake Manufacturing Co.; will extend mains and install additional electrical apparatus, etc.; G. E. Fussell, vice-president and general manager; J. E. Roberts, secretary-treasurer. (See "Machinery Wanted.")

Tex., Lagrange.—City receives bids until April 5 for erection of building for water and light plant; one story; reinforced concrete; fireproof; plans and specifications on file with City Secretary; each bidder to submit plans and specifications with bid, but must submit bid on city's plan; certified check \$250.

Va., Gordonsville.—City voted \$10,000 bond issue for extension of water-works. Address The Mayor.

WOODWORKING PLANTS

Ark., Helena.—Veneer.—Arkansas Veneer Co. (Cannon Bros. of Cairo and Geneva, Ill., representatives) will establish plant to manufacture veneer from cottonwood and gum timber.

Ark., Texarkana.—Hubs, Spokes, etc.—F. J. Bosler of Indiana purchased (from Mann Land & Improvement Co.) 1600 acres hardwood timber land and contemplates building plant to manufacture hubs, spokes, handles, etc.

Fla., Tallahassee.—Interior Trimming.—Tallahassee Manufacturing Co. organized with A. Pichard president-treasurer, C. A. Pichard manager; purchased machinery and will manufacture interior trimmings, etc.;

has 60x90-foot building. (Richard Bros. recently noted to establish plant.)

Ga., Columbus—Coffins and Caskets.—Columbus Coffin & Casket Co. will be organized by Macon O. Berry, 738 Broad St. and others to manufacture coffins, etc.; has building and machinery. (See "Machinery Wanted.")

Ky., Providence—Handles.—Turner, Day & Woolforth, Louisville, Ky., contemplate establishing handle factory.

Md., Baltimore—Boxes.—William Suchting & Sons, William Suchting, president, 604-606 Portland St., will erect addition to box factory; three stories; brick; 40x40 feet; mill construction; Henry E. Feldhaus, 2627 N. Calvert St., Baltimore, prepared plans; F. C. Carstens, 655 Clider Al., Baltimore, has contract.

Mo., St. Louis—Tables, etc.—Udell-Predock Manufacturing Co., 2305 N. Broadway (recently noted increasing capital stock), is taking additional space in present building and will install machinery costing about \$1200; no construction.

N. C., Lincolnton—Shuttle Blocks.—C. D. Roberts, Greensboro, N. C., contemplates establishing plant to manufacture shuttle blocks for cotton mill shuttles, etc.

North Carolina.—Arthur Buckner, Columbus, O., contemplates, it is reported, purchase of timber land and establishment of woodworking plant in Western North Carolina.

Okla., Hugo—Handles.—No Break Handle Co., capital stock \$3000, incorporated by I. H. Caldwell, L. Reymann, E. A. Reymann and A. Moore.

Okla., Muskogee—Trunks.—Muskogee Trunk Factory, capital stock \$10,000, incorporated by Edward J. Kinzer and Harvey H. Teasley, Muskogee, and John Beacon, Baldwin, Kans.

Tenn., Memphis—Poplar Products.—Memphis Poplar Products Co., capital stock \$10,000, incorporated by G. O. Friedel, F. J. Blackwell, R. A. Taylor and others.

Va., Richmond—Barrels.—Mayo Barrel Co. will rebuild plant burned at loss of \$3000.

Va., Richmond—Telephone Cabinets.—American Telephone Cabinet Co., capital stock \$100,000, incorporated with Morgan R. Mills president, William B. West vice-president, George W. Lancaster secretary-treasurer.

W. Va., Bluefield—Furniture.—Appalachian Furniture Co., capital stock \$50,000, incorporated by F. O. Barnes, A. B. Bell, J. F. Phelps and others. (Recently mentioned.)

BURNED

Ark., Altx.—C. Roll & Co.'s building; Altx Mercantile Co.'s store; Postoffice building; Dr. J. B. Blakely's drug store; loss \$27,000.

Ark., Little Rock.—Gleason Hotel at Center and 2d Sts.; loss \$5000.

Fla., Jacksonville.—Dwellings of Benjamin Porter, R. V. and R. M. Rogers, Percy Bowen, J. S. Simmons; stores of Walter Brown, Sallas & Plummer, J. H. Patterson and A. M. Ives; loss approximately \$50,000.

Fla., Oakland.—J. O. Brock's store; J. C. Michael's store; Perkins Bros.' store; total loss \$29,000.

Ga., Hawkinsville.—Newsome-Coleman Co.'s annex; loss \$12,000 to \$15,000.

Ga., Indianola.—C. I. Shelton's sawmill; loss \$4000.

Ky., Danville.—Boyle Humphrey Gymnasium of Central University; loss \$50,000.

Ky., Sweet Owen, R. F. D. from Owenton. A. L. Hammond & Co.'s warehouse.

Ky., Versailles.—John T. Barbee & Co.'s fermenting room and office building at distillery.

La., Franklinton.—Eugene L. Magee's residence; loss \$4000.

Mo., Kansas City.—Dwelling at 59th and Main Sts., owned by Fletcher Cowherd Realty Co.; loss \$8000.

Md., Elkton.—Opera-house building; loss \$3500 to \$4000.

Md., Mt. Washington.—Dr. David E. Duff's residence at Kenock and Greenspring Ave.; loss about \$15,000.

Mo., Kansas City.—Building 905 Baltimore Ave., owned by Henry Berlis; loss about \$8000.

N. C., Greenville.—C. T. Munford's store; Gornito Sho Co.'s building and others; total loss on buildings about \$30,000.

N. C., Moss Neck, P. O. at Lumberton.—E. L. Odum's cotton gin, residence, etc.

N. C., Rutherfordton.—Rutherford Roller Milling Co.'s mill.

N. C., Silkhope, R. F. D. from Siler City.—Perry & Johnson's roller mills; loss \$3000.

Okla., Henryetta.—Clegern Bldg., owned by G. P. Reynolds; loss \$20,000.

S. C., Orangeburg.—T. A. Fairley's residence on S. Broughton St.

S. C., Orangeburg.—John Cart's warehouse.

S. C., Sharon.—Jeff D. Whiteside's residence; loss \$4500.

S. C., Summerton.—Henry A. Tisdale's cotton gin; loss \$3000.

Tenn., Bell Buckle.—J. L. Sutton's residence; loss \$5000.

Tenn., Chattanooga.—Consigee's Favorite Box Co.'s plant damaged; loss \$10,000.

Tenn., Concord.—Taylor & Doughty's office building; loss \$15,000.

Tenn., Tullahoma.—Residence of Mrs. Fannie D. Hickerson, containing boys' dormitory; loss \$11,600.

Tenn., Tullahoma.—Roberts-Maxwell-Tins-

ley Co.'s delivery and sales barn; loss \$4000.

Tex., Ennis.—A. M. Morrison states that building recently reported burned was but slightly damaged.

Tex., Ladonia.—Presbyterian church. Address The Pastor, Presbyterian Church.

Va., Richmond.—R. L. Barnes Safe & Lock Co.'s plant, loss \$20,000; Boyd Iron Works, loss \$30,000; Mayo Barrel Co.'s plant, loss \$8000; Richmond Cotton Oil Co.'s refinery, loss \$2000.

Va., Richmond.—Waller Taylor & Son's building at 119 N. 18th St.; loss about \$8000.

W. Va., Gladys.—Grand View Hotel, owned by W. H. Price; loss \$8000.

W. Va., Hendricks.—New Grand Opera House.

W. Va., Weston.—B. Kaplan's store; loss \$10,000.

BUILDING NEWS

BUILDINGS PROPOSED

APARTMENT-HOUSES

Ala., Birmingham.—Joy Construction Co. acquired site on Eleventh Ave. South, between 20th and 21st Sts., and contemplates erection of apartment-house; 10 stories.

Ala., Birmingham.—T. H. Molton has site 48x190 feet corner Fifth Ave. and 20th St. and contemplates erecting apartment, store and hotel building; six stories; reinforced steel and concrete; upper floors for bachelor apartments and family hotel; seven stories facing 20th St., three on Fifth Ave.; elevators; hot and cold water baths; tentative plans being prepared; cost \$100,000.

D. C., Washington.—Howard M. Etchison, 1822 Columbia Rd. N. W., will erect apartment-house on California St.; cost \$120,000.

D. C., Washington.—John L. Warren is having plans prepared by Hunter & Bell, architects, 505 7th St. N. W., and Carroll Beale, engineer, Woodward Bldg., 15th and H Sts. N. W., Washington, for fireproof apartment-house on Rhode Island Ave. between 14th and 15th Sts.; four stories; 50x130 feet; brick and reinforced concrete.

Fla., Lakeland.—H. D. Bassett will close contract April 15 to erect apartment and store building recently noted; cost \$22,000. (See "Stores.")

Fla., Miami.—J. J. McCarthy has plans by George Pfeiffer, Miami, for apartment-house on Avenue B, between 8th and 9th Sts.; 75 rooms; three stories; frame; 45x95 feet; one to four-room apartments; running water in all rooms.

Fla., Tampa.—Hendry & Knight have plans and will soon award contract for store and apartment-house at Washington and Franklin Sts. for Mrs. J. A. Frieble. (See "Stores.")

Ga., Atlanta.—Charles A. Sisson will erect apartment-house at 61 W. Harris St.; three stories; cost \$25,000.

Ga., Atlanta.—Black estate will erect apartment-house at rear of 103 N. Pryor St.; cost \$20,000.

Ga., Savannah.—C. F. Buckwald will erect apartment-house on President St. between Abercorn and Lincoln Sts.; three stories; brick; cost \$9000.

La., New Orleans.—Mrs. G. W. Race (J. L. Onarato, agent) will expend \$45,000 to erect apartment-house; 40x70 feet; five stories; fireproof construction; low pressures steam heat; electric lighting; automatic electric elevator; composition roofing; plans by Dibold, Owen & Goldstein, 704 Perrin Bldg., New Orleans. (Recently noted.)

La., New Orleans.—Mrs. G. W. Race (J. L. Onarato, agent) will expend \$45,000 to erect apartment-house; 40x70 feet; five stories; fireproof construction; low pressures steam heat; electric lighting; automatic electric elevator; composition roofing; plans by Dibold, Owen & Goldstein, 704 Perrin Bldg., New Orleans. (Recently noted.)

La., New Orleans.—Mrs. G. W. Race (J. L. Onarato, agent) will expend \$45,000 to erect apartment-house; 40x70 feet; five stories; fireproof construction; low pressures steam heat; electric lighting; automatic electric elevator; composition roofing; plans by Dibold, Owen & Goldstein, 704 Perrin Bldg., New Orleans. (Recently noted.)

Md., Baltimore.—Stanislaus Russell, 2900 Clifton Ave., Baltimore, prepared plans for Phoenix Court apartment-house on Mount Royal Drive opposite Druid Lake; four stories; buff brick; limestone trimmings; high-speed passenger elevator; hot-air heat; electric lights; cost \$125,000.

Mo., St. Louis.—W. H. Humes, agent, will erect apartment-house on Nina Pl. near Westminster Pl.; three apartments.

Mo., St. Louis.—J. Charles Mueller will erect 9 five and six-room apartment-houses on Greer Ave.; brick porches; French folding doors; cost \$70,000.

Mo., St. Louis.—Joseph L. Wyland of Francis-Wyland Building & Realty Co. will erect six-family apartment-house on Berlin Ave.

Mo., St. Louis.—N. William Cuba will erect two-story tenement-house at 3135-37 Potomac St.; cost \$5000.

Mo., St. Louis.—Mrs. B. M. Siebert will

erect two-story tenement-house at 3154 Halliday St.; cost \$5000.

Mo., St. Louis.—Otto W. Uthoff will erect apartment-house on Berlin Ave.; three stories; six apartments.

Mo., St. Louis.—Joseph Trenkle, Jr., will erect two two-story apartment-houses at 1442-1448 Semple Ave.; three rooms and bath suites; furnace heat; cost \$10,000.

Mo., St. Louis.—A. F. Woas will erect two-story tenement-house at 3881-83 Utah St.; cost \$4500.

Mo., St. Louis.—Daniel Bloss will erect apartment-house at 1518 Linton Ave.; two stories; cost \$6000.

Mo., St. Louis.—Robert J. Lloyd will erect apartment-house on Gilson Ave.; brick.

N. C., Charlotte.—A. Morris McDonald is having plans prepared by Fred L. Bonfoey, Charlotte, for proposed apartment-house; 48x88 feet; two stories and basement; two apartments; eight rooms each; brick; granite trimmings; hot-air furnace; electric lighting; cost \$8000 to \$10,000. (See "Machinery Wanted.")

S. C., Greenwood.—W. B. Williams is reported as considering erection of apartment-house; four stories; elevator; telephones and private baths for all rooms; cost \$35,000.

Tenn., Chattanooga.—Sidney B. Wright is having plans prepared by Bearden & Deacon, Chattanooga, for apartment-house at Fourth and Georgia Aves.; three stories and basement; rough texture gun-metal brick laid in gray mortar; green tile roofing.

Tenn., Memphis.—J. B. Moody will erect apartment-house at 216 Turley St.; cost \$5000.

Tenn., Memphis.—J. R. Ellis, 305 N. McNeill St., will expend \$4500 to erect two apartment-houses; 10 rooms each; ordinary construction; hot-water heat; electric wiring; shingle roof; plans and construction by owner. (Recently noted under "Dwellings." See "Machinery Wanted.")

Tenn., Nashville.—Claude C. Christopher is having plans prepared for apartment-house on Eighth Ave.; 11 stories. Mr. Christopher wires Manufacturers Record: "Apartment-house will cost \$250,000; lot 90x110 feet; fireproof construction; brick and terra-cotta extension; architect, J. E. H. Carpenter, Metropolitan Tower, New York."

Tex., El Paso.—Great Texas Realty Co. will erect apartment-house on W. Missouri St.; 40x94 feet; 124 feet high; brick; 30 apartments; 108 rooms; cost \$42,000.

Tex., El Paso.—Davis & Stevens will erect tenement-house at Kansas and 3d Sts.; cost \$4000.

Tex., Houston.—Sid Westheimer will erect undertaking establishment building with apartments on second floor. (See "Miscellaneous Structures.")

Tex., San Antonio.—Mrs. E. J. McKinnon will probably erect apartment-house on Main Ave.; four or five stories.

Va., Petersburg.—Combined Realty & Investment Co., Edward S. Evans, president, Richmond, Va., plans to erect six-story apartment-house on Sycamore St. (See "Hotels.")

ASSOCIATION AND FRATERNAL

Ala., Birmingham.—Zapora Temple, Nobles of the Mystic Shrine, will probably erect temple at 614 N. 19th St.

Ark., Cotter.—Ancient Free and Accepted Masons will erect lodge building; cost \$5000.

Ark., Clarendon.—Benevolent Protective Order of Elks will erect \$5000 lodge building.

Ark., Helena.—Ancient Free and Accepted Masons will erect temple; four stories; brick and stone.

Fla., Jacksonville.—Most Worshipful Union Grand Lodge of Masons (colored) has plans by Mark & Sheftall, Jacksonville, for store, office and lodge building; five stories; 70x100 feet; concrete construction reinforced with brick and terra-cotta; cost \$100,000; lower floor for stores and bank; second and third floors for offices; upper floors for lodge purposes; construction in charge of W. D. Carter, Jacksonville.

Ga., Macon.—Colored Knights of Pythias of Georgia will erect lodge hall on Cotton Ave.; cost \$60,000.

La., La Place.—John A. Reine Camp, No. 504, has plans by Harold Raymond, Box 1678, New Orleans, La., for lodge building; 60x40 feet; fireproof; concrete blocks; cost \$7500; architect may be addressed. (Recently noted.)

La., Napoleonville.—Knights of Columbus, Assumption Council No. 1009, will erect clubhouse and store building; three stories; brick.

Md., Arlington.—Junior Order of United American Mechanics has plans by Stanislaus Russell, Clifton Ave. and 7th St., Baltimore, Md., for lodge building; 25x70 feet; ordinary construction; tin roof; steam heat; cost \$6000. Address proposals to W. L. Russell, chairman building committee.

Mo., Crocker.—Grand Commandery, Knights Templar, Bert S. Lee, Grand Commander, Springfield, Mo., will expend \$10,000 to \$12,000 to erect barracks; 200 rooms; ordinary frame construction; architect not selected; S. E. Waggoner, Pierce Bldg., St. Louis, Mo., may be addressed. (Recently noted.)

S. C., Walterboro.—Fraternal Realty Co. incorporated with \$5000 capital stock by J. M. Moore, A. S. Karesch, J. C. Lemacks and others; will erect fraternal building; two stories; lower floor for stores; upper floor for lodge purposes.

Tenn., Memphis.—Ancient Free and Accepted Order of Masons will, it is reported, erect lodge building corner Court Ave. and 4th St.; eight stories; cost \$300,000; John W. Bailey, president Masonic board, wires Manufacturers Record: "Sold old temple and bought lot for new. Can give no details at present."

Tex., El Paso.—Blue Lodge, Ancient Free and Accepted Masons, has plans by Trost & Trost, El Paso, for lodge building; cost \$100,000.

W. Va., Bluefield.—Independent Order of Odd Fellows will not, at present, erect lodge building; J. K. Morgan, secretary. (Recently noted.)

BANK AND OFFICE

Ala., Brewton.—E. M. Lovelace and associates will erect bank building, etc.; plans by George Rogers, Mobile, Ala. (See "Hotels.")

Ark., Little Rock.—H. L. Remmel is having plans prepared by C. L. Thompson, 504 Southern Trust Bldg., Little Rock, for store and office building. (See "Stores.")

D. C., Washington.—Bids will be invited about April 15 to erect Reeside Bros.' building, New York Ave. near 13th St. N. W., for Southern Dental Supply Co., 618 12th St. N. W.; plans by Milburn, Heister & Co., Union Savings Bank Bldg., Washington; five-story fireproof structure. (Recently described.)

D. C., Washington.—Charles W. Kling, Jr., 980 New York Ave. N. W., will erect office and store building at 934 New York Ave.

D. C., Washington.—Home Savings Bank, 7th, Massachusetts Ave. and K St. N. W., will erect branch bank building at 8th and H Sts. N. E.; fireproof; plans by A. P. Clark, Jr., 216 14th St., Washington; details not determined.

D. C., Washington.—Potomac Electric Power Co., 213 14th St. N. W., has plans by Milburn, Heister & Co., Home-Life Bldg., Washington, D. C., for office building on 14th St.; stone and brick exterior; reinforced concrete interior; cost \$125,000.

Fla., West Palm Beach.—Pioneer Bank, B. A. Maxfield, cashier, will let contract April 25 to erect bank, office and store building; two stories; 87x97 feet; reinforced concrete walls; ordinary construction; hot-water heat; gas and electric lighting; cost \$34,000; plans by George L. Pfeiffer, Lemon City, Fla.; bank fixtures, furniture, vault lining and doors, and ornamental woodwork not in general contract. (Previously noted.)

Fla., Jacksonville.—Most Worshipful Union Grand Lodge of Masons has plans by Mark & Sheftall, Jacksonville, for store, office and lodge building. (See "Association and Fraternal.")

Ga., Atlanta.—Atlanta Realty Corporation

will open bids about June 1 to erect office building; 60x200 feet, irregular; fireproof construction; plans by J. E. R. Carpenter, 1 Madison Ave., New York. (Previously noted as increasing capital stock to \$2,000,000 and to erect office building, etc.)

Ga., Cassville.—Bank organized with W. Pittard president, G. W. Battle vice-president; will erect bank building.

Ga., Dublin.—A. Ten Eyck Brown, architect, 607 Forsythe Bldg., Atlanta, Ga., states that plans for First National Bank Bldg. will not be ready for estimates until April 29. (Recently noted to receive bids until June 1.)

Ga., Savannah.—Savannah Trust Co., Valmore W. Lehey, assistant secretary, will erect new bank building; plans not determined. (Recently noted.)

Ky., Louisville.—T. P. Taylor has plans by Brinton B. Davis, Louisville, for office and display building for Kentucky Electric Co. on 4th St. near Chestnut St.; three stories; cost \$18,000.

Md., Baltimore.—Charles T. Leviness, The Arcade, 19 and 21 South St., has option on site at northeast corner South and Water Sts.; if deal is consummated will award contract to Joseph L. Stafford, 45 Herkimer St., Brooklyn, N. Y., to erect office building; probably six stories.

Mo., St. Louis.—St. Louis Amusement & Mercantile Co. incorporated with \$2000 capital stock by Samuel Ryan, C. S. Ehrhardt and others to erect office and store building on Delmar and Bayard Aves.; 120x168 feet; cost \$50,000.

Okla., Cheyenne.—A. L. Thurmond, president Cheyenne State Bank, will rebuild burned bank; brick; cost \$15,000.

S. C., Greenville.—R. E. Houston and T. C. Gower will erect store and office building. (See "Stores.")

Tenn., Lenoir County, R. F. D. No. 3 from Franklin.—Bank of Lenoir County contemplates erecting brick building; plans not definite.

Tex., Anahuac.—H. H. Jackson has plans by F. W. Steinman, Beaumont, Tex., for bank building; 40x75 feet; two stories; gasoline lighting; composition roof; will let contract in about 15 days.

Tex., Jefferson.—W. P. Schlutter will rebuild store and office building. (See "Stores.")

Tex., Kilgore.—Bank organized by J. W. Brantley of Oakwood, Tex., and others; will erect brick building.

Va., Milford.—Milford State Bank, W. N. Blatt, president, will erect bank building; brick or concrete; plans not determined.

W. Va., Spencer.—First National Bank will erect bank building.

CHURCHES

Ala., Tuscaloosa.—First Methodist Church will erect edifice; cost \$45,000. Address The Pastor, First Methodist Church.

Ark., Tillar.—Methodist Church will have plans prepared by Clyde A. Ferrell, Little Rock, Ark., for edifice; brick; cost \$10,000.

Ark., Tillar.—Baptist Church is having plans prepared by Clyde Ferrell, Little Rock, Ark., for edifice; cost \$6,000.

D. C., Washington.—St. Agnes' Episcopal Church, New York Ave. and 4th St. N. W., will erect proposed edifice on Q St. N. W. between N. Capitol and 1st Sts.

Fla., West Palm Beach.—Baptist Church purchased site at Poinsettia and Gardenia Sts. and will erect edifice. Address The Pastor, Baptist Church.

Ga., Lincolnton.—Methodist congregation, Rev. John L. Franklin, pastor, will receive bids until May 1 to erect edifice; 44x64 feet; ordinary construction; hot-air heat; gas lighting; cost \$3,000; plans by Henry T. Hogan, Leah, Ga.; contract recently noted awarded. (See "Machinery Wanted.")

La., Crowley.—Methodist congregation contemplates erecting edifice. Address A. P. Holt.

La., Crowley.—Presbyterian congregation will not erect edifice as recently stated.

Miss., Brookhaven.—First Baptist Church, Rev. W. H. Morgan, pastor, invites architects to submit plans for edifice; brick; cost \$25,000; 16x32-foot addition (recently noted) is only temporary structure.

Miss., Greenwood.—Beth Israel Congregation, Leon Stein, secretary, has not selected architect for temple to replace burned structure. (Recently noted.)

Mo., Kansas City.—Linwood Methodist Episcopal Church, Rev. E. Comble Smith, pastor, will erect auditorium on Linwood Blvd.; stone; cost \$75,000.

N. C., Bladenboro.—Baptist Church, H. G.

Bridges, chairman of committee, is having plans prepared by J. M. McMichael, Charlotte, N. C., for edifice; brick; steam heat; electric lighting; cost \$12,000.

N. C., Canton.—Locust Field Baptist Church, Rev. J. Dawson Bowen, pastor, will erect church; cost \$10,000; architect not selected.

N. C., Charlotte.—Associate Reformed Presbyterian Church, J. H. Ross, chairman of committee, is having plans prepared by J. M. McMichael, Charlotte, for edifice previously noted; brick; steam heat; electric lighting; cost \$25,000. (See "Machinery Wanted.")

N. C., Clayton.—Methodist Episcopal Church, C. H. Harne, chairman of committee, is having plans prepared by J. M. McMichael, Charlotte, N. C., for edifice; brick; steam heat; electric lighting; cost \$20,000.

N. C., Fayetteville.—Presbyterian Church, C. G. Rose, chairman of committee, is having plans prepared by J. M. McMichael, Charlotte, N. C., for edifice; brick; steam heat; electric lighting; cost \$25,000.

N. C., Goldsboro.—Methodist Episcopal Church, Rev. D. H. Tuttle, pastor, is having plans prepared by J. M. McMichael, Charlotte, N. C., for edifice; brick; steam heat; electric lighting; cost \$50,000.

N. C., Statesville.—Friendship Church, Rev. R. L. Maness, pastor, R. F. D. No. 5, receives bids until April 15 to erect edifice.

N. C., Wilmington.—Bladen St. Methodist Church, Rev. W. L. Rexford, pastor, will erect church to replace present structure; frame; cost \$5,000; B. C. Moore and C. O. Knox, building committee.

Okla., Oklahoma City.—St. George Society of Greeks, A. P. Costakis, president, will erect church.

S. C., Columbia.—St. Timothy's Episcopal Church, Rev. Wilmer S. Poynor, rector, purchased site at Calhoun and Lincoln Sts. and will erect edifice; remove present structure to rear of new location and remodel for parish house and Sunday-school department.

S. C., Columbia.—St. James' African Methodist Episcopal Church has plans by J. H. Sams, Carolina National Bank Bldg., Columbia, for edifice; 40x100 feet; hot-air heat; cost \$10,000; day labor.

S. C., Walhalla.—Rev. A. K. Gwynn is having plans prepared by Milburn Heister & Co., Home Life Bldg., Washington, D. C., for chapel; cost \$15,000.

Tenn., Chattanooga.—Centenary M. E. Church will erect Sunday-school building at McCallie Ave. and Lindsay Sts.; cost \$30,000 to \$35,000; John S. Martin, chairman of building committee.

Tenn., Memphis.—Sacred Heart Catholic Church, Rev. Father Mahoney, pastor, is having plans prepared by Harker & Cairns, 525 Schmitz Bldg., Memphis, for edifice; limestone construction; 75x150 feet.

Tex., Fort Worth.—First Baptist Church, W. P. Portwood, chairman committee, will rebuild burned church.

Va., Richmond.—Ascension Episcopal Church, Rev. James E. Poindexter, rector, will erect edifice at Fourth Ave. and Custer St., Chestnut Hill; main auditorium to seat 225 and basement for Sunday-school; cost \$6,000; James C. Bowman, D. Paul Radd and S. M. Bishop, building committee.

CITY AND COUNTY

D. C., Washington.—Stable.—District Commissioners will open bids April 10 to reconstruct stable for street cleaning department in alley between N and O, 9th and 10th Sts. N. W.; specifications, etc., on file at office chief clerk, Engineer Department, Room 427 District Bldg.

Fla., Clearwater.—Jail.—Pinellas County Commissioners accepted plans by Willis R. Biggers, Tampa, Fla., for courthouse and jail; former fireproof; concrete interior and exterior; faced with select buff brick; terracotta trimmings and cornices; Bedford stone columns; granite steps; Spanish tile roof; copper dome; steel trusses for roof and dome; latter of reinforced concrete; faced with buff brick; tile roof; terracotta and stone trimmings; first floor to contain jailor's office, rotunda, padded cell, hospital, kitchen, two felon cells; second floor for six cages (two with baths) and detention room; will also provide jailor's residence; cost \$65,000; furniture to cost \$12,000. (Recently noted.)

Fla., Jacksonville.—Fire Station.—City acquired site at Jefferson and Forsyth Sts. for erection of No. 4 fire station; pressed brick; Thomas W. Honey, chief of fire department.

Fla., Pensacola.—Jail.—Escambia County Commissioners will open bids April 10 to complete county jail; James M. Johnson, act-

ing architect and superintendent of construction. (Previously noted.)

Ga., Valdosta.—Auditorium.—City has plans by L. R. Benz, Valdosta, for enlargement of city hall and converting second floor into theater; will extend building, increase number of offices and recorder's office on first floor, etc.; will double seating capacity. (Recently noted.)

Tenn., Nashville.—Police Station.—Board of Public Works, Geo. W. Stainback, chairman, will receive separate bids as follows for addition and alterations to police station on Second Ave. North: Foundation, ditches and masonry; concrete floors, etc.; cut stone, window sills, etc.; brick masonry; plastering and metal lathing; plumbing and fixtures; steam heating; roofing and galvanized iron work; painting and glazing; carpenter work; steel and cast-iron work; certified check for 10 per cent. amount of bid with each proposal; plans and specifications at office of B. J. Hodge, architect; Room 524 Cole Bldg., Nashville.

Tex., Beaumont.—Jail.—City will probably adopt plans by A. Rabin, Beaumont, to remodel lower floor of market for city jail; will provide police station, offices for chief of police and assistants, cells, etc.; cost about \$50,000. (Recently noted.)

Va., Richmond.—Armory.—City will probably select architect April 17 to prepare plans for First Regiment Armory building. (Recently noted.)

COURTHOUSES

Ark., Little Rock.—Pulaski county, Joe Asher, Judge, approved plans and specifications by George R. Mann for courthouse annex; cost of building \$300,000; bids to be invited soon.

Fla., Clearwater.—Pinellas County Commissioners accepted plans by Willis R. Biggers, Tampa, Fla., for courthouse and jail. (See "City and County.")

DWELLINGS

Ala., Birmingham.—F. T. Dow will erect two two-story frame residences on S. 18th St.; cost \$5,000.

Ala., Montgomery.—Realty Syndicate is having plans prepared by C. F. Gallaher, Bell Bldg., Montgomery, for dwelling; cost \$4,000.

Ala., Birmingham.—Tyler, Lester & Fain Realty Co. will erect two-story frame residence; cost \$6,500.

Ala., Gadsden.—Harry Bellinger has plans by C. B. Smith, Gadsden, for dwelling; two stories; ordinary construction; tin shingle roof; cost \$4,000; bids opened April 1. (Recently noted.)

Ala., Marvel.—Roden Coal Co., Birmingham, Ala., will erect commissary and 20 dwellings for white miners; \$30,000 appropriated.

Ala., Montgomery.—J. M. Foster is having plans prepared by C. F. Gallaher, Bell Bldg., Montgomery, for dwelling in Cloverdale; cost \$5,000.

Ala., Ozark.—J. D. Holman is having plans prepared by C. F. Gallaher, Bell Bldg., Montgomery, Ala., for dwelling; green glazed tile roof; tile porches; pressed-brick trimmings; hardwood floors; cost \$25,000.

Ark., Little Rock.—Bracy-Beauchamp-Nel-meyer Real Estate Co. will erect eight residences on W. 20th St.

Ark., Little Rock.—A. M. Keith is having plans prepared by C. L. Thompson, Little Rock, for residence at 22d St. and Broadway; pressed brick; 60x85 feet; ordinary construction; hot-water heat; slate roof; cost \$25,000.

Ark., Little Rock.—J. C. Perry will erect residence at 719 Battery; frame veneer; two stories; cost \$6,000.

D. C., Washington.—H. R. Howenstein, 1314 F St. N. W., will expend \$3500 each to erect three dwellings; 20x40 feet; eight rooms and bath; ordinary construction; tin roof; plans by L. T. William, 1339 F St. N. E., Washington; construction by owner. (Recently noted.)

D. C., Washington.—Samuel Shapiro, 2401 Georgia Ave. N. W., and Israel Diamond purchased site on Morton Pl. N. E., and will erect row of dwellings.

D. C., Washington.—Rankin Rice, 1411 Fessenden St. N. W., purchased site on 42d St. and will erect residence.

D. C., Washington.—Dr. Zeno B. Babbitt, The Parkwood, 1750 K St. N. W., is having plans prepared by Blanchard, Barnes & Marlow, New York, for residence on Huntington St. between Connecticut Ave. and 38th St.

D. C., Washington.—Charles H. Taylor, 3425 Newark St. N. W., will erect frame dwelling at 3461 Macomb St.; cost \$5,000.

Fla., Jacksonville.—Brown Realty Co., 418

Duval Bldg., will erect dwelling; 21x40 feet; fireplaces; metal shingles; plans and construction by owner.

Fla., Jacksonville.—Charles A. Brown, Jr., will erect residence; three stories; brick veneer.

Fla., Jacksonville.—Hill Investment Co. will erect two dwellings on 9th St.; two stories; frame.

Fla., Miami.—Atlantic Realty Co. will erect number of dwellings on 16th St. in connection with development of Riverside.

Fla., Orlando.—Edgar Graham, Greenville, S. C., will erect residence.

Ga., Augusta.—John Sancken will erect residence at 249 Greene St.; cost \$5,500.

Ga., Athens.—J. H. McCoy will erect dwelling at 594 Capitol Ave.; two stories; frame; cost \$3,700.

Ga., Atlanta.—J. B. Bowen will erect two dwellings at 300-304 Prado St.; two stories; frame; cost \$11,000.

Ga., Atlanta.—W. D. Ellis will erect three dwellings on South Pryor St.; brick; cost \$15,000.

Ga., Atlanta.—Dillon-Morris Company will erect two-story frame dwelling at Brookline and one at 105 Linwood Ave.; cost \$3,400 and \$6,300, respectively.

Ga., Augusta.—Joseph E. Campbell will erect residence corner Kings Way and Johns Road; two stories; stucco; cost \$10,000.

Ga., Macon.—Dr. H. C. Perdue will erect residence at Buford Pl.; frame; cost \$3,750.

Ky., Louisville.—Mary Gasper will erect residence at 219 E. Kentucky Ave.; two stories; frame; cost \$3,500.

Ky., Louisville.—Ellerbe Carter will erect two frame dwellings at 871 and 665 Pope Pl.; cost \$6,200.

Ky., Louisville.—George Feldman will erect dwelling at 3246 West Broadway; brick; cost \$5,500.

La., New Orleans.—A. J. Wolf will erect residence; two stories; frame; cost \$950.

Md., Baltimore.—Provident Realty Corporation, Garrison and Piedmont Aves., has plans by Henry J. Tinley, 312 N. Charles St., Baltimore, for two cottages on east side of Roslyn Ave. near Bateman Ave., and one at Roslyn and Bateman Aves.; frame; broad verandas; slate roof; concrete foundations; cement sidewalks and cellars; 28x32 feet; cost \$15,000; construction by owner.

Md., Baltimore.—Jacob S. Parr, York Rd. near Homeland Ave., purchased site 425x151 feet at Ravenswood Ave. and York Rd. and will erect number of twin cottages; ornamental brick.

Md., Baltimore.—Frederick C. Zink, 1810 Baker St., will erect 10 dwellings on Woodberry Ave., Woodberry; two stories; pressed brick; marble trimmings; slag roof; cement sidewalks and yards; cost \$25,000.

Md., Baltimore.—William G. Scott, Oakfield and Springdale Aves., is having plans prepared by Stanislaus Russell, 2900 Clifton Ave., Baltimore, for residence on Oakford Ave. between Springdale and Forest Aves., Forest Park; two and a half stories; slate roof; verandas on three sides; electric lights; steam heat; cost \$6,000.

Md., Baltimore.—Charles R. Burdette, 226 N. Fulton Ave., will erect eight two-story brick dwellings on Smallwood St. between Clifton and Windsor Aves.; 15x100 feet; ornamental brick; marble trimmings; cement cellars, sidewalks and yards; cost \$15,000.

Md., Baltimore.—E. J. Gallagher Realty Corporation, 2612 Fleet St., will erect 42 dwellings on Fleet St.; two stories; two dwellings 14x48 feet, 41 dwellings 13x44 feet.

Md., Baltimore.—Owners' Realty Co., Chas. W. Hurst, president, Builders' Exchange Bldg., will erect 75 dwellings on Park Heights Ave. and Woodberry Ave.; semi-detached; two stories; brick; also erect two brick cottages on Woodland Ave.

Md., Baltimore.—Southern Construction & Realty Co. will expend \$12,000 to erect five dwellings and one store; 13x40 feet and 11x35 feet; ordinary construction; hot-air heat; gas and electric lighting; cement sidewalks; tin or slag roofing; plans by G. H. Davidson, 2405 Presbury St., Baltimore; construction by owner. (Recently noted.)

Md., Baltimore.—Phillip H. Minor, 730 N. Carrollton Ave., has plans by Stanislaus Russell, 2900 Clifton Ave., Baltimore, for eight dwellings on Dillon and Streeter Sts.; two stories; brick; marble trimmings; cement yards and cellars; concrete foundations; 13x40 feet; cost about \$10,000.

Md., Baltimore.—Philip C. Mueller Building Co., 3720 Falt Ave., will erect 56 dwellings in 3900 block Falt Ave. and Foster Ave.; 48 14 feet 2 inches by 45 feet 8 inches and

g 16x52 feet; Pompeian brick fronts; marble base and trimmings; cost \$90,000.

Mo., Wellhams.—Tuxedo Club, 830 E. Baltimore St., Baltimore, Md., is having plans prepared for keeper's house. (See "Miscellaneous Structures.")

Mo., Kansas City.—H. D. Seavey is having plans prepared by A. Van Brunt & Co., Kansas City, for residence at 52d St. and Sunset Drive; practically four fronts; first story brick; two upper floors of stucco; ballroom on third floor; brick paved terrace 26x84 feet; portion for garage; two sleeping porches; hot-water heat; shingle roof; cost \$25,000; date of opening bids not set.

Mo., St. Louis.—F. W. Tegeler will erect two-story store and dwelling at 2775-77 Alice St.; cost \$90,000.

Mo., St. Louis.—Ernest Loran of Bankers' Trust Co. will, it is reported, erect residence in Maryland Terrace; cost \$15,000 to \$20,000.

Mo., St. Louis.—Mrs. Margaret Jennings will erect dwelling on McPherson Ave.; plans by Mariner & La Beaume; cost \$15,000.

Mo., St. Louis.—Edwin Nolte of Nolte & Williams, St. Louis, will erect 17 bungalows on Kossuth and Fair Aves.; cost \$100,000.

Mo., St. Louis.—Lewis Realty & Building Co. will erect eight dwellings on Ashland and Lorraine Aves.; one story; cost \$13,000.

Mo., St. Louis.—George R. Hogg, president of Hogg-Harris Lumber Co., will, it is reported, erect residence in Maryland Terrace; cost \$15,000 to \$20,000.

Mo., St. Louis.—Dr. L. W. Reber will, it is reported, erect residence in Maryland Terrace; cost \$15,000 to \$20,000.

Mo., St. Louis.—J. R. Payken will erect dwelling at 2253 Holly St.; two stories; cost \$14,000.

Mo., St. Louis.—Pendleton Investment Co. will erect tenement building at 1231 Hamilton St.; three stories; cost \$20,000.

Mo., St. Louis.—John Sherry and August Steinhmann will erect tenement buildings at 2846-2848 Pennsylvania Ave.; two stories; cost \$60,000.

N. C., Charlotte.—C. W. Allison is having plans prepared by Fred L. Bonfoey, Charlotte, for dwelling; six rooms and sleeping porch; frame; hot-air heat; electric lighting; cost \$40,000. (See "Machinery Wanted.")

N. C., Charlotte.—Dr. J. S. Clifford is having plans prepared by Fred L. Bonfoey, Charlotte, for dwelling; seven rooms; frame; hot-air heat; electric lighting; cost \$40,000; date of opening bids not determined. (See "Machinery Wanted.")

N. C., Gastonia.—Dr. C. E. Adams is having plans prepared by Fred L. Bonfoey, Charlotte, N. C., to remodel building; will add four or five rooms; concrete basement and foundation; hot-air heating plant; two bathrooms; hardwood floors and finish; slate roof; mantels, tile and grates in all rooms; cost \$50,000.

N. C., Greensboro.—John A. Hodgkin will erect residence; two stories; nine rooms; cost \$10,000.

N. C., Lumberton.—Saloom Seelby will erect residence and store. (See "Stores.")

N. C., Red Springs.—J. Johnson is having plans prepared by J. M. McMichael, Charlotte, N. C., for dwelling; brick; hot-water heat; electric lighting; cost \$15,000.

Okla., Oklahoma City.—C. P. Whiteman, president of Interstate Brokerage Co., will erect \$50,000 dwelling.

Okla., Oklahoma City.—John G. Long, cashier of State Exchange Bank, will erect dwelling.

S. C., Bamberg.—A. M. Brabham has plans by J. H. Sams, Carolina National Bank Bldg., Columbia, S. C., for residence; cost \$35,000.

S. C., Barnwell.—R. W. Dix has plans by J. H. Sams, Carolina National Bank Bldg., Columbia, S. C., for dwelling; cost \$35,000.

S. C., Charleston.—Thomas G. Creighton will erect residence at 52 Rutledge Ave.; cost \$7,000.

Tenn., Memphis.—H. J. Rettew will erect dwellings on Court Ave., Snowden Circle and Tucker St.; cost approximately \$10,900.

Tenn., Nashville.—Miss Willie Kepling will erect residence on Eighth Ave.; six rooms and bath; hardwood floors; cost \$3,000.

Tenn., Nashville.—A. B. Ransom will erect residence; brick veneer; metal roof; cost \$4,000.

Tenn., Nashville.—Bransford Realty Co. will erect 200 houses during 1912. (See "Land Developments.")

Tex., Arcadia.—J. E. Travis will erect residence; two stories; 12 rooms.

Tex., Cameron.—A. N. Green will erect residence; cost \$10,000.

Tex., Eagle Lake.—R. M. Simmons will erect residence; cost \$15,000.

Tex., San Antonio.—P. J. Owens is having plans prepared by Associated Architects, 513 Slaughter Bldg., Dallas, Tex., for three residences; cost \$2500 each.

Tex., Rusk.—J. F. Mallard is having plans prepared by Associated Architects, 513 Slaughter Bldg., Dallas, Tex., for dwelling; 8 rooms; cost \$4,000; plans ready about April 10.

Tex., Iowa Park.—Methodist congregation is having plans prepared by Associated Architects, 513 Slaughter Bldg., Dallas, Tex., for parsonage; contract let about April 1; C. H. Clark may be addressed.

Tex., Temple.—Dr. J. M. Murphy will erect residence.

Va., Norfolk.—Bond Mortgage Securities Co. will erect two dwellings on Almsworth St. and two on 39th St.; frame; cost \$10,285.

Va., Richmond.—H. F. Bernhard will erect three dwellings at 417-19-21 W. Main St.; two stories; brick; 60x80 feet; mill construction; tin roof; cost \$10,000; plans by E. A. Smith, 817 N. 26th St., Richmond.

Va., Richmond.—S. C. Krug will erect detached two-story brick dwelling on Grace St.; cost \$6,000.

Va., Richmond.—Dallas S. Bruce will erect detached two-story brick tenement at 647-49 N. 8th St.; cost \$7,000.

Va., Rosemont (not a postoffice).—W. J. Waller is having plans prepared by Millburn, Heister & Co., Home Life Bldg., Washington, D. C., for dwelling.

W. Va., Cameron.—Harry Elbin, cashier of First National Bank, is having plans prepared by George Dieringer, Wheeling, W. Va., for eight-room residence.

W. Va., McMechen.—Mrs. Elizabeth Riddle has plans by George Dieringer, Wheeling, W. Va., for residence; cost \$3,500.

W. Va., Wheeling.—Mrs. J. E. Miller is having plans prepared by George Dieringer, Wheeling, for residence at Wheeling Junction; cost \$3,500.

GOVERNMENT AND STATE

Ala., Talladega—Postoffice.—Treasury Department, James Knox Taylor, supervising architect, Washington, D. C., opened bids to erect postoffice; Algernon Blair of Montgomery, Ala., is lowest bidder at \$67,900 for limestone and \$70,000 for sandstone construction. (Recently noted.)

Ark., Paragould—Postoffice.—Treasury Department, James Knox Taylor, supervising architect, Washington, D. C., opened bids to erect Federal building; M. Yeager & Son, Danville, Ill., are lowest bidders for limestone construction at \$44,250, and Moore & Payne, Joplin, Mo., for sandstone construction at \$45,900. (Recently noted.)

Miss., Parchman—Penitentiary.—State Penitentiary, L. Yerger, secretary, will rebuild barn; convict labor; no bids. (Recently reported burned.)

Okla., Muskogee—Postoffice.—Treasury Department, James Knox Taylor, supervising architect, Washington, D. C., will, it is reported, advertise April 15 for bids to erect proposed building.

S. C., Columbia—Hospital.—State will vote in August on \$1,000,000 bond issue for construction of proposed hospital buildings at State Park on site of 2161 acres; structures will accommodate 1200 white patients and 1200 negro patients; to include administration building centrally located, staff house, superintendent's residence, residences for stewards and other employees, amusement hall, with seating capacity of 1000; laundry; about 20 dormitories, etc.; plans by F. B. Ware, Albany, N. Y.; J. L. Budlow, consulting engineer. (Previously noted.)

S. C., Darlington—Postoffice.—Treasury Department, James Knox Taylor, supervising architect, Washington, D. C., opened bids to erect Federal building; W. J. Brent Construction Co., Norfolk, Va., is lowest bidder at \$43,597 for limestone construction and at \$43,847 for sandstone construction. (Recently noted.)

Tex., Dallas—Postoffice.—Treasury Department, James Knox Taylor, supervising architect, Washington, D. C., opened bids for improvements to Federal building, including painting all rooms, revarnishing interior and exterior woodwork, changing electric-light system, etc.; Grehne Contracting Co., Joliet, Ill., is lowest bidder at \$352, and will probably receive contract.

Va., Salem—Hospital.—State Board of Health, Richmond, Va., Dr. Ennion G. Williams, president, will erect hospital for tubercular patients at Eminence; cost \$40,000.

HOTELS

Ala., Birmingham.—T. H. Molton will erect hotel, store and apartment building at Fifth Ave. and 20th St. (See "Apartment-houses.")

Ala., Brewton.—E. M. Lovelace and associates will erect hotel and tank building; 60x120 feet; brick and stone; cost \$25,000; plans by George Rogers, Mobile, Ala.

Ala., Huntsville.—James E. Penney, proprietor Huntsville Hotel, contemplates rebuilding burned hotel.

Ark., Jonesboro.—Will Link leased Hotel Warner; will remodel at cost of \$5,000.

Ark., Leslie.—Clyde Ferrell is preparing plans for proposed hotel; 42 rooms; cost \$35,000.

Ky., Central City.—Lucien Miller will erect proposed hotel; four stories; brick.

La., Plaquemine.—L. Silber will erect hotel; 40 rooms; three stories; two stores on ground floor; cost \$30,000.

La., Baton Rouge.—Louis & Rafe Mayer will erect third story to Mayer Hotel; 30 rooms.

Miss., Woodmen Springs (not a postoffice).—Woodmen Springs Co., recently noted incorporated at Gloster, Miss., with \$50,000 capital stock by W. L. Robinson and others, will open bids April 19 to erect hotel and sanitarium; 100x150 feet; mill construction; steam heat; gas and electric lighting; cement sidewalks; rubber roofing; hand elevator; J. E. Brown of Gloster, Miss., probable contractor. O. P. McPherson may be addressed. (See "Machinery Wanted.")

Mo., Kansas City.—A. M. Clark and F. B. Gillett leased site on 9th St. and will erect hotel; 58 rooms.

N. C., Lumberton.—B. A. Anderson & Son of Waverly Hotel have site at Chestnut and 2d Sts. and will erect hotel; 108x108 feet.

S. C., Hartsville.—E. R. Perry is preparing plans and will erect hotel and store building. (See "Stores.")

Tenn., Knoxville.—Richards, McCarty & Buford, architects, Hartman Bldg., Columbus, O., state plans for Imperial Hotel will be ready for contractors about July 1; eight stories; 50x75 feet, with L 75x125 feet; latter three stories, with carrying capacity for eight stories; fireproof; install steam-heating and electric-lighting plants; electric elevators; asphalt roof. (Recently noted.)

Tenn., Chattanooga.—Mountain House Co. (recently noted incorporated with \$5000 capital stock) will not erect hotel on Lookout Mountain; is operating company.

Tex., Terrell.—O. F. Walton may be addressed relative to plans for remodeling Hotel Shelby; promoters contemplate taking over Hotel Shelby property at cost of \$10,500 and expending \$8500 in improvements; have option on property until April 1. (Commercial Club recently noted interested.)

Va., Norfolk.—J. P. Bambalos has plans by H. W. Simpson, Newbern, N. C., for hotel on Brewer St.; three stories; brick; cost \$15,000; Richardson Construction Co., Baker & Brinkley and R. M. Price, all of Norfolk, have been invited to bid.

Va., Petersburg.—Combined Realty & Investment Co. incorporated; Edward S. Evans, president, Richmond, Va.; James E. Cuthbert, vice-president, Petersburg; will develop four blocks on Bollingbrook St., including Stratford Hotel, for wholesale district; plans to erect seven-story hotel at Washington and Union Sts., six-story apartment-house on Sycamore St., etc.

MISCELLANEOUS

D. C., Washington.—Hospital.—Woman's Home Mission Society of Methodist Episcopal Church will open bids April 11 to erect Sibley Memorial Hospital; 133x52 feet; fireproof construction; extension of present system of heating and lighting; electric passenger and electric dumbwaiter; cost \$125,000; plans by Wm. J. Palmer, Warder Bldg., Washington; contractors estimating are Melton Construction Co., 1317 H St. N. W.; James L. Parsons, Union Trust Bldg.; Saml. J. Prescott & Co., 814 13th St. N. W.; W. E. Mooney, 1425 New York Ave. N. W.; Boyle-Robertson Construction Co., Union Trust Bldg.; Burgess & Parsons, 612 13th St. N. W.; W. P. Lipscomb & Co., 1405 F St. N. W.; Charles J. Cassidy Company, 523 13th St. N. W.; John J. Nolan, 1413 G St. N. W.; Arthur Coswill, 809 7th St. N. W., all of Washington, and James G. Doak & Co., Philadelphia, Pa. (Previously noted.)

Fla., Lakeland—Hospital.—T. B. Hendrix, C. G. Memminger and C. W. Deen are interested in erection of hospital corner S. Missouri Ave. and Palmetto St.; cost \$15,000.

Ga., Macon—Sales Stable.—B. T. Adams

purchased site for \$50,000 and will erect sales stable corner 3d and Pine Sts.

Ky., Jefferson County—Sanatorium.—Dr. E. G. Dick of Crab Orchard, Ky., leased South Park Hotel and will convert into sanatorium for inebriates.

Ky., Louisville.—Library.—Trustees of Louisville Free Public Library will erect Portland branch library at 33d St. and High Ave.; secured site 105x198 feet. (Recently noted as awarding contract to erect Jefferson branch library.)

La., Baton Rouge—Fair Buildings.—Central Louisiana Fair Association organized with \$100,000 capital stock.

La., Patterson.—Building committee selected Stevens & Nelson, New Orleans, La., as architects for proposed \$40,000 school.

Md., Frederick.—Armory.—Legislature passed bill appropriating \$40,000 to erect armory for Company A; Charles A. Little, D. John Markey, J. P. T. Mathias and others, commission.

Md., Wellhams—Clubhouse.—Tuxedo Club, 830 E. Baltimore St., Baltimore, Md., is having plans prepared by McLaughlin Bros., 915 Bolton St., Baltimore, Md., for clubhouse and keeper's house; frame construction.

Mo., Kansas City—Hospital.—Christian Church Hospital, J. W. Perry, president of trustees, will establish hospital, etc., on 38 acres of land bounded by Brighton and Hardesty Aves. and 17th and 20th Sts.; erect administration building first at cost of \$30,000; erect 13 other structures, one each year; each to cost \$100,000; plans include tuberculosis sanitarium and orphanage; all structures light cream-toned brick with cut stone and terra-cotta trimmings; French Renaissance; sun porches and roof gardens. (Previously noted.)

N. C., Charlotte—Clubhouse.—Mecklenburg Country Club will erect dining hall and ballroom; also install heating plant. (Recently noted to make improvements to clubhouse and grounds.)

N. C., Hendersonville—Clubhouse.—Dr. W. M. Stinson, F. W. King and Stockton Broom, all of Jacksonville, Fla., purchased Saloia Inn and 132 acres of land and will improve for clubhouse; will remodel and erect additional buildings; to contain 50 rooms; dining-room and lobby to accommodate 500 people; erect cottages surrounding clubhouse; electric lighting; shingle roof; day labor; plans by Burnett Carter, Hendersonville.

Tenn., Memphis—Clubhouse.—Boys' Club organized by Rev. Father Peters; is having plans prepared for clubhouse on east side of N. 2d St. (Lately noted.)

Tex., Dallas—Armory.—O. J. Stallings, Dallas, prepared plans for proposed armory for Dallas Artillery; three stories; 111x235 feet; main drill hall 97x145 feet; basement 50x100 feet; freight and passenger elevators; auditorium 87x122 feet; stage 24x40 feet; shower baths; cost \$100,000.

Tex., Houston—Clubhouse.—Houston Chamber of Commerce and Houston Club are reported as to erect building to be occupied by the two organizations.

Tex., Houston—Undertaking Establishment.—Sid Westheimer will erect building for undertaking establishment, living apartments, chapel and, if fourth story is constructed, lodgeroom; three stories; 50x100 feet; fireproof; reinforced concrete and pressed brick; first floor, 50x60 feet, for offices and chapel; separate garage; automatic elevator.

Va., Alexandria.—City will erect proposed \$10,000 school. Address The Mayor.

RAILWAY STATIONS

Fla., Sarasota.—Seaboard Air Line Railway, W. L. Seddon, chief engineer, Portsmouth, Va., awarded contract to E. W. Parker, Tampa, Fla., to erect passenger depot; 70x28 feet; brick veneer; metal shingles; cost \$5975. (Recently noted.)

Okla., Afton.—St. Louis & San Francisco Railroad, F. G. Jonahl, chief engineer, St. Louis, Mo., will, it is reported, erect depot; brick; cost \$10,000.

SCHOOLS

Ark., Ashdown.—Ashdown School Board will sell bonds to erect \$30,000 school.

Ark., Benton.—City is having plans prepared by Clyde A. Ferrell, Little Rock, Ark., for proposed high school; brick; stone trimmings; two stories; six rooms.

Ark., Harrison.—City sold \$20,000 of bonds to erect high school. Address The Mayor.

Ark., Jonesboro.—City School Board sold \$40,000 of bonds to erect high school.

Ark., Newport.—City is having plans prepared by George R. Mann, Little Rock, for school; pressed brick; tile roof; stone trimmings; cost \$50,000.

Ga., Buford.—City will vote April 13 on \$5000 school bond issue. Address The Mayor.

Ga., Columbus.—City will erect school on 16th St.; cost \$10,000. Address The Mayor.

Ga., Senoia.—City voted March 26 on \$10,000 bond issue to erect school to replace burned structure; Mayor I. L. Hutchinson, C. F. Hollberg and J. T. Arnall, building committee. (Lately noted.)

Ky., Sharpsburg.—Owen Ratcliff, chairman of Board of Education, will open bids April 5 to erect school; plans and specifications at office of E. Stamler, architect, 303 Marriek Lodge Bldg., Lexington, Ky.

La., Baton Rouge.—School Board, T. H. Harris, chairman, will open bids April 20 to erect school; fireproof; steam heat; electric lighting; composition roof; cost \$75,000; plans by Stevens & Nelson Co., New Orleans, La. (Recently noted to receive bids until April 22.)

La., New Orleans.—City will soon advertise for bids to erect proposed Boys' High School; brick and terra-cotta; composition roof; Tudor-Gothic style; basement equipped for gymnasium, 52x90 feet; shower, needle and tub baths, etc.; blacksmith and machine shops, classrooms, etc.; beam ceilings, wood panels, etc., in faculty and study rooms; eye-comfort lighting system; plans by E. A. Christy, New Orleans. (Previously noted.)

La., Opelousas.—Rev. Father J. Engberink of St. Landry Catholic Church is interested in erection of negro industrial school.

Maryland.—Legislature passed bill authorizing \$600,000 bond issue to erect State Normal School buildings; Sarah E. Richmond, principal of school, Carrollton and Lafayette Aves., Baltimore, Md.

Mo., Kansas City.—Jackson County Commissioners, Independence, Mo., will receive bids until April 23 to erect school; duplicate of structure at McCune Home for Boys; brick and stone.

N. C., Bakersville.—Mitchell Institute, R. T. Teague, principal, will erect additional building; cost \$5000 to \$6000.

N. C., Salisbury.—Committee of North Carolina Synod of Evangelical Lutheran Church recommended Salisbury as site for erection of proposed College for Women; cost approximately \$100,000; John Rehder, Wilmington, N. C.; M. Thompson, Lexington, N. C., and John Rutledge of Concord, N. C., committee. (Lately noted.)

S. C., Holly Hill.—Dr. J. L. B. Gilmore, chairman of trustees, will receive bids until April 17 to erect brick school; certified check for \$200; plans and specifications from J. H. Sams, architect, Columbia, S. C., on deposit of \$25. (Recently noted.)

S. C., Scranton.—City will erect school building; ordinary construction; cost \$6000; architect not selected. (Bond issue of \$20,000 recently noted.)

Tenn., Nashville.—Trustees of George Peabody College for Teachers adopted plans by Ludlow & Peabody, 12 W. 31st St., New York, for laying out grounds, location and erection of buildings; plans contemplate ultimate erection of 18 academic buildings, 15 dormitories, model school, social service building, manual training and power-house building, 50-acre campus and 5-acre athletic field; structures to be not more than three stories, classic design with Southern colonial features; arranged in transverse quadrangles with social service building as key of main quadrangle; this structure to contain Y. M. C. A. and Y. W. C. A. rooms, literary society rooms, parlors, committee-rooms, gymnasium, Bible classrooms, auditorium, etc.; structures to be erected a. once include manual training and power-house building, one girls' dormitory, domestic science building and psychology building, all to be completed within a year at cost of about \$350,000; total expenditure for grounds and all buildings to be about \$2,500,000. (Previously noted.)

Tex., Anahuac.—Common School District No. 3 will erect one-story brick school building; cost \$6000; plans by F. W. Steinman, Beaumont, Tex.

Tex., Asherton.—Board of Education, John P. Wood, secretary, will let contract April 15 to erect school building; 54x60 feet; two stories; ordinary construction; hot-air heat; shingle roof; cost \$11,000; plans by John Bradgeman. (Recently noted to receive bids until April 15.)

Tex., Benbrook.—Benbrook School District voted \$3000 of bonds to erect school. Address Tarrant County Commissioners at Fort Worth, Tex.

Tex., Houston.—City receives bids and will let contract April 15 to erect Rusk School building recently noted; 195x85 feet; three stories; fireproof construction; 5-ply composition roofing; cost \$60,000; plans by Oile

J. Lorehn, 421 Temple Bldg., Houston; work to be let in five separate contracts; general work, plumbing, sewerage and gas fitting; vacuum cleaning; steam heating; cement floors in basement; sidewalks and shell drives; all bids submitted on blank form as attached to specifications; alternate bids to be received on steam blast heating and ventilating systems and on direct steam vacuum heating system; also on combination ventilating and heating systems; certified check for 4 per cent. of total amount of bid.

Tex., Howard, R. F. D. Waxahachie.—Board of trustees will erect school building; 40x70 feet; four rooms; ordinary construction; probably Smith system of heating; cost \$3000; architect not selected; open bids in May or June. (Bond issue of \$3325 recently noted.)

Tex., San Marcos.—F. M. Bralley, president of State Normal School Board of Regents, Austin, Tex., will receive bids until April 15 to erect reinforced concrete manual arts building with brick walls and plumbing and wiring; certified check for \$500 payable to Mr. Bralley with building bids and for \$100 with plumbing and wiring bids; plans at offices of Behles & Boelhaue, architects, San Antonio, Tex.; of president of Normal School at San Marcos, or State Department of Education at Austin, Tex., or may be had on deposit of \$25. (Previously noted.)

Va., Charlottesville.—University of Virginia is reported as to erect proposed building for Department of Education; cost \$40,000.

Va., Bedford City.—School Board will expend \$25,000 to erect school building; 80x104 feet; ordinary construction; fan system of heating; composition roof; plans by Heard & Cardwell, Lynchburg, Va. Address proposals to architects. (Recently noted.)

STORES

Ala., Birmingham.—T. H. Molton will erect store, hotel and apartment building at Fifth Ave. and 20th St. (See Apartment-houses.)

Ala., Birmingham.—John W. Caldwell will erect two stores on Spring St.; one story; brick; cost \$5000.

Ala., Birmingham.—R. D. Burnett purchased site at 1815 Second Ave. and is having plans prepared by Henry Wheelock for commercial building; 50x140 feet; fireproof; five or six stories; cost about \$100,000.

Ala., Gadsden.—S. H. Kress & Co., 396 Broadway, New York, will erect store building; cost \$25,000.

Ala., Tuscaloosa.—G. B. Wright will erect double store building.

Ark., Little Rock.—J. M. Rouse & Son will erect two-story frame building at 1501 W. 22d St.; cost \$4000.

Ark., Little Rock.—H. L. Rummel is having plans prepared by C. L. Thompson, 504 Southern Trust Bldg., Little Rock, for business building; two stories; six or seven stores on first floor; offices on front of second floor; probably warehouses or lodge hall in rear; pressed brick with white enameled front; 107x140 feet; cost \$25,000 to \$35,000.

Ark., Newport.—Joseph Strayton is having plans prepared by George R. Mann, Little Rock, Ark., for business building; two stories; cost \$10,000.

D. C., Washington.—A. H. Taylor, 1316 L St. N. W., will erect three two-story buildings at 414-18 12th St. S. E.; cost \$6000.

D. C., Washington.—Slyder-Clough Heating Co., 918 F St. N. W., will erect store building at 900 10th St. N. W.; two stories; brick; cost \$4000.

D. C., Washington.—Harry Wardman, 1342 New York Ave. N. W., will erect stores at 1404 and 1427 Buchanan St. N. W.; cost \$48,000.

D. C., Washington.—Washington Tobacco Co., 8th and D Sts. N. W., will erect store at 917 E St. N. W.

D. C., Washington.—Charles W. King, Jr., 920 New York Ave. N. W., will erect store and office building. (See "Bank and Office.")

D. C., Washington.—Charles Sonne, 3504 13th St. N. W., will erect store and motion-picture theater at 14th and Irving Sts.

Fla., Jacksonville.—S. J. Nelson will remodel building at Clay and Adams Sts.; convert lower floor into series of stores with plate-glass fronts; also erect one-story brick store building on Adams St.

Fla., Jacksonville.—Most Worshipful Union Grand Lodge of Masons has plans by Mark & Sheftall, Jacksonville, for store, office and lodge building. (See "Association and Fraternal.")

Fla., Jacksonville.—Bettelini estate will erect building at Bay and Johnson Sts.; two stories; brick.

Fla., Lakeland.—H. D. Bassett will close contracts April 15 to erect store and apartment building; 53x120 feet; three stores on first floor; six apartments above; ordinary construction; electric lighting; fireproof roof; cost \$22,000; plans by Guy Platt Johnson. (Recently noted.)

Fla., Tampa.—Hendry & Knight have plans and will soon award contract for store and apartment building at Washington and Franklin Sts. for Mrs. J. A. Friebee; two stories; brick; 160x90 feet; lower floor for stores; upper floors for apartments; cost \$25,000.

Fla., West Palm Beach.—Pioneer Bank, B. A. Maxwell, cashier, will let contract April 25 to erect store, office and bank building previously noted; cost \$34,000. (See "Bank and Office Buildings.")

Ga., Augusta.—Culpepper Bros. will not at present erect building as recently reported.

Ga., Dawson.—L. C. Durham will erect six brick stores.

Ga., Rome.—Anchor Duck Mill Co. will erect store on Cave Spring Rd. near Lyle Spring; 40x75 feet; brick.

Ky., Louisville.—T. P. Taylor has plans by Brinton B. Davis, Louisville, for office and display building. (See "Bank and Office.")

La., Baton Rouge.—Baton Rouge Realty Co. will erect store building.

La., Napoleonville.—Knights of Columbus, Assumption Council No. 169, will erect store and club building. (See "Association and Fraternal.")

La., Plaquemine.—L. Silber will erect hotel and store building. (See "Hotels.")

Md., Baltimore.—Southern Construction & Realty Co. will expend \$12,000 to erect dwellings and store recently noted. (See "Dwellings.")

Mo., St. Louis.—St. Louis Amusement & Mercantile Co. will erect store and office building. (See "Bank and Office.")

Mo., St. Louis.—Portland Place Realty Co. will expend \$4200 to alter store at 817 Washington St.

Mo., St. Louis.—F. W. Tegeler will erect store and dwelling. (See "Dwellings.")

S. C., Greenville.—R. E. Houston and T. C. Gower will erect store and office building at Main and E. Broad Sts.; two stories; brick; cost \$8000.

N. C., Lumberton.—Saloom Seelby will erect store and dwelling on Elm St.; two stories; brick; 16x50 feet.

S. C., Olar.—C. F. Riser has plans by J. H. Sams, Carolina National Bank Bldg., Columbia, S. C., for store; two stories; 50x100 feet; brick; hand-power freight elevator; cost \$12,000.

S. C., Columbia.—J. H. Sams, Carolina National Bank Bldg., Columbia, will prepare plans for store on Main St.; three stories and basement; electric freight elevator; cost \$15,000.

S. C., Hartsville.—E. R. Perry is preparing plans and will erect store and hotel; 90x100 feet; ordinary construction; asbestos roofing; cost \$25,000. (Recently noted.)

S. C., Walterboro.—Fraternal Realty Co. incorporated by J. M. Moor and others; will erect store and lodge building. (See "Association and Fraternal.")

Tenn., Nashville.—Kennedy & Stevens has plans by Fletcher & Billis, Nashville, for store building; two stories; brick.

Tex., Bryan.—Dr. J. W. Howell has plans for two stores on Main St.; brick.

Tex., Bryan.—J. A. Myers will erect fireproof business block on S. Main St.; 50x100 feet; two stories; electric lighting; cost \$18,000. (Previously noted.)

Tex., Corpus Christi.—John Jordt will open bids April 10 to erect store building; plans by Henry T. Phelps, San Antonio, Tex. (Recently noted to receive bids until March 31.)

Tex., Dallas.—Dallas Dry Goods Co., John R. Cavanaugh, president, will erect wholesale dry goods store; ten stories; fireproof construction; cost \$350,000. (Previously noted.)

Tex., Jefferson.—W. P. Schlutter will rebuild store and office building; two stories; 50x105 feet. (Recently reported burned at loss of \$10,000.)

Tex., Paris.—D. S. Hammond and M. V. De Witt will erect business buildings; two stories.

Tex., Paris.—Mrs. Lightfoot will erect business building.

Va., Bonatown.—Fuller Bros. of Appalachia and Big Stone Gap, Va., will erect department-store building.

Va., Petersburg.—Combined Realty & Investment Co. will develop four blocks on

Boilingbrook St. for wholesale district. (See "Hotels.")

Va., Richmond.—Henry S. Wallerstein will, it is reported, erect number of stores on Broad St.

W. Va., Bluefield.—G. Hyman & Sons will erect store; three stories; brick; cost \$20,000.

W. Va., Grafton.—W. R. D. Dent is having plans prepared by George Dieringer, Wheeling, W. Va., for business block; three stories.

W. Va., Spencer.—Parish Bros. awarded contract to erect business building; brick.

THEATERS

D. C., Washington.—Charles Sonne, 3504 13th St. N. W., will erect theater and store building. (See "Stores.")

La., Baton Rouge.—J. B. Banks of Louisville, Ky., will erect motion-picture theater on 3d St.; cost \$15,000.

Tex., Elgin.—Thomas Pfeiffer will erect opera-house.

Va., Staunton.—Julius L. Witz, Albert Schultz and associates will erect theater at Main and Market Sts.; three stories; 60x116 feet; white brick; eight exits; seating capacity 1200; cost \$30,000.

WAREHOUSES

Fla., Jacksonville.—Ames Realty Co., Knowlton T. Ames, president, Chicago, Ill., purchased site near corner of Bay and Laura Sts. and will erect building with dock to extend to channel line; brick; at least three stories.

Ga., Dawson.—Kennedy & Brimm will erect addition to brick warehouse at Lee and Stoneval Sts.; 119x156 feet.

Ky., Carlisle.—Farmers' Loose Leaf Warehouse Co. will increase capital stock to \$100,000 and erect additional warehouse to increase capacity to 1,000,000 pounds weekly.

Ky., Lexington.—Fayette Loose Leaf Tobacco Warehouse Co. will erect warehouse about same proportion as present structure.

Ky., Louisville.—Tobacco Realty Co. will erect warehouse; two stories; brick; cost \$20,000.

Ky., Mt. Sterling.—Farmers' Tobacco Co. incorporated with \$30,000 capital stock by D. J. Burnett, Robert E. Tipton and others; will erect warehouse; iron and steel; loading platform; 60-foot driveway; cost \$20,000. (Recently noted.)

Md., Baltimore.—Terminal Warehouse Co., North, Pleasant and Davis Sts., has plans by Owens & Sisco, 1605 Continental Bldg., Baltimore, for flour-house extension; six stories; brick; stone trimmings; slag roof; three freight elevators; cost not less than \$100,000; contractors estimating are J. Henry Miller, 108 Dover St.; Charles L. Stockhausen, National Marine Bank Bldg.; John Cowan, 106 W. Madison St.; John Hiltz & Son, 3 Clay St.; Noel Construction Co., German and Calvert Sts., all of Baltimore. (Recently noted.)

N. C., Henderson.—Cotton Fiber & Mattress Co., Edwin B. Taylor, manager, will erect warehouses, etc. (See "Miscellaneous Factories.")

Okl., Oklahoma City.—N. S. Sherman Warehouse Co. will award contract about May 1 to erect warehouse; six stories; 240x140 feet, fireproof; cost \$200,000; Ron V. Moran, vice-president, 612 Insurance Bldg. (Previously more fully described.)

Tenn., Chattanooga.—Wheeling Corrugating Co. will, it is reported, erect proposed factory construction warehouse; two stories and basement; steam heat; 50,000 square feet floor space.

Tenn., Nashville.—Gray & Dudley will erect warehouse.

Tex., Houston.—Guatemala Coffee Co. is having plans prepared by Green & Finger, Houston, for warehouse; three stories; pressed brick; fireproof compartments; freight elevator. (See "Miscellaneous Factories.")

Va., Wytheville.—Bruce & Co. will erect storage warehouse on Main St.; 40x75 feet; brick.

W. Va., Bluefield.—Huff, Andrew & Thomas are having plans prepared by Pedigo & Garry, Bluefield, for warehouse; five stories; brick; cost \$65,000.

Engberg Direct-Connected Generating Sets.

The Butler, Mo., municipal electric-light and power plant is having installed a 30-kilowatt direct-connected generating set, purchased from Engberg's Electrical and Mechanical Works, St. Joseph, Mich. A 15-kilowatt set from the same company is being installed by the Water Department, Fargo, N. D.

BUILDING CONTRACTS AWARDED

APARTMENT-HOUSES

Tenn., Memphis.—Henry Halle awarded contract to erect apartment and store building; cost \$10,000. (Recently noted.)

Va., Norfolk.—Abner Pope awarded contract to John T. Lenoir to erect apartment-house at Colley and Redgate Aves.; brick; cost \$22,000.

ASSOCIATION AND FRATERNAL

Tex., Corsicana.—Ancient Free and Accepted Masons awarded contract to Church & Jones, Corsicana, to erect Masonic Temple; cost \$5000.

BANK AND OFFICE

D. C., Washington.—Interstate Building Corporation awarded contract to Wells Bros., New York, to erect Interstate Building on F St.; 10 stories; fireproof; steel frame construction; electric elevators; steam heat; pressed brick, terra-cotta and marble; will be occupied by Continental Trust Co. on first floor and Interstate Commerce Commission on upper floors; cost \$350,000; plans by Milburn, Heister & Co., Home Life Bldg., Washington. (Previously noted.)

Ga., Ocala.—First National Bank of Ocala awarded contract to C. H. Austin, Ocala, to erect proposed bank and office building at 4th and Cherry Sts.; two stories; brick and stone; 42x82 feet; steam heat; cost \$12,000; plans by T. F. Lockwood, Ocala.

N. C., Rocky Mount.—E. Epstein awarded contract to D. J. Rose & Co., Rocky Mount, to erect store and office building. (See "Stores.")

S. C., Lexington.—Home National Bank awarded contract to H. C. Van Ormer & Son, Pittsburg, Pa., to erect bank building at Main and Depot Sts.; brick; 65x48 feet; two stories; lower floor for bank and mercantile purposes; upper floor for 11 offices; cost \$10,000.

Tenn., Memphis.—D. Sternberg awarded contract to Fred B. Young & Son, 512 Memphis Trust Bldg., Memphis, to erect proposed bank building; 25x90 feet; ordinary construction; brick; cost \$10,000; plans by Jones & Furbinger, Porter Bldg., Memphis.

Tex., Houston.—Mrs. Frances Dooley awarded contract to Lisle-Dunning Construction Co., Houston, to erect store and office building. (See "Stores.")

Va., Norfolk.—Virginia Railway & Power Co. awarded contract at \$83,114 to J. H. Pierce of Norfolk to erect office building; two stories; 40x100 feet; car barns, roundhouses, etc. (See "Miscellaneous Structures.")

CHURCHES

La., New Orleans.—Our Lady Star of the Sea Church, Father Charles, pastor, awarded contract to Frederick Hoffman of New Orleans, to erect church on N. Prieur, Music, Independence Park and N. Johnson Sts.; 54x129 feet; balcony and steeple; seating capacity, 1000. (Lately noted.)

Md., Baltimore.—All Saints' Protestant Episcopal Church, Baltimore and Monroe Sts., Rev. E. V. Wroth, rector, 1844 W. Baltimore St., awarded contract to S. H. Lamb, 1803 Appleton St., Baltimore, to erect addition to edifice; two stories; brick; plans by A. Lowther Forrest, 405 Hoffman Bldg., Baltimore. (Recently noted.)

Tex., Orange.—St. Vitales Catholic Church awarded contract to T. A. and D. W. Howell of Orange to erect church; brick; 48x72 feet; cost \$12,000 to \$15,000; plans by H. C. Banker, Houston, Tex. (Lately noted.)

CITY AND COUNTY

N. C., Hendersonville.—Library.—City awarded contract to W. P. Bane of Hendersonville to erect Carnegie library on Fourth Ave. and King St.; one story and basement; 42x52 feet; red-faced brick; blue granite foundation; cost \$10,000.

Tenn., Humboldt.—City Hall.—City awarded contract at \$14,500 to Jordan Hayes, Humboldt, to erect city hall; plans by John Gaisford, Memphis, Tenn. (Recently noted.)

Tenn., Winchester.—Jail.—City awarded contract to erect proposed jail. Address The Mayor.

DWELLINGS

D. C., Washington.—Levi P. Morton, 1500 Rhode Island Ave. N. W., awarded contract to D. C. Weeks & Son, New York, to remodel and improve residence; will provide marble front to replace present one; exterior improvements alone to cost \$80,000; will remove several bay windows, etc., install new cell-

ings, floors, etc.; plans by John Russell Pope, New York.

Fla., Bartow.—Mrs. W. B. Swearingen awarded contract to Hill Bros., Bartow, to erect dwelling; 14 rooms; frame; hot-air heat; electric lighting; black slate roof; cost \$25,000; plans by Bonfoey & Elliott, Tampa, Fla. (Previously noted.)

Md., Baltimore.—Fidelity & Deposit Co., Charles and Lexington Sts., awarded contract to Morrow Bros., 216 W. Saratoga St., Baltimore, to complete proposed 24 houses on Riggs Ave. near Bloomingdale Rd.; cost \$26,000.

Md., Baltimore.—G. E. Gambrill has plans by Edward L. Palmer, 408 Roland Ave., Roland Park, Md., for residence at Kittery Lane and University Parkway; two stories and attic; 48.2x71.6 feet; slate roof; hardwood and parquetry floors; cost \$26,000; awarded contract to Gladfelter & Chambers, Parkdale and Maryland Aves., Baltimore.

Md., Baltimore.—Alfred Shriver awarded contract to Downing & Murphy, 537 Franklin Terrace, Baltimore, to complete eight semi-detached dwellings on 18th St.; 16x40 feet; ordinary construction; gas and electric lighting; cost \$24,000.

Md., Baltimore.—Jackson Realty Co. awarded contract to J. F. Olive to erect seven dwellings on Poplar Grove near Brighton St.; two stories; brick; slag roof; steam heat; plans by Stanislaus Russell, 2900 Clifton Ave., Baltimore.

Md., Baltimore.—Harry A. Cochran awarded contract to Edward L. Turner, Bateman Ave., near Garrison Ave., to erect dwelling on south side of Carlisle Ave.; two and one-half stories; ornamental frame; slate roof; plans by Herbert C. Alken, 223 St. Paul St.; cost \$25,000.

Md., Govans.—Henry A. Knott, 1305 Home-wood Ave., Baltimore, Md., has contract to erect cottage on Beaumont Ave.; two and a half stories; frame; cost \$4000.

Md., Frederick.—U. A. Lough awarded contract to Mehrl Gittinger, Frederick, to erect six dwellings on Wisner St.

N. C., Charlotte.—E. T. Cansler awarded contract to erect summer residence at Little Switzerland.

N. C., Charlotte.—W. E. Price awarded contract to J. A. Hilton & Bro. to erect residence on Colonial Heights; cost \$5000.

N. C., Winston-Salem.—J. O. Gregg awarded contract to Fogle Bros. Co. to erect proposed dwelling; nine rooms; two stories and basement; frame; electric lighting; cost \$3000.

Okl., Oklahoma City.—G. H. Nichols, State National Bank Bldg., awarded contract to erect residence; buff brick.

Tenn., Knoxville.—Mrs. A. J. Albers awarded contract at \$9176 to J. M. Dunn & Son of Knoxville to erect bungalow; brick; hardwood interior; will erect garage for three machines; contract to be awarded soon for plumbing, heating and lighting, electric wiring and private water plant; plans by R. F. Graf & Sons, Van Deventer Bldg., Knoxville.

Tenn., Memphis.—A. P. Galtner awarded contract to J. M. Harris to erect dwelling at 91 Belvedere Blvd.; cost \$5400.

Tenn., Memphis.—Dr. William T. Black awarded contract to J. W. Tatum of Memphis to erect residence on Peabody Ave.; two stories; brick; tile roof; fireproof; plans by Jones & Furbinger.

Tenn., Memphis.—Martin Jennings awarded contract to Irwin & McGuire, Memphis, to erect residences at 1233, 1243, 1253 and 1263 Neptune St. and 886 Trigg Ave.; cost \$10,500.

Tenn., Memphis.—A. Mancini awarded contract to James Alexander Construction Co., Memphis, to erect brick-veneer residence at 1888 Overton Park Ave.; brick veneer; cost \$15,600.

Tenn., Memphis.—James Alexander awarded contract to James Alexander Construction Co. to erect brick-veneer residence at 1892 Overton Park Ave. and 1884 Overton Park Ave.; cost \$53,400.

Tenn., Memphis.—E. E. McClure awarded contract to F. E. Meacham, Memphis, to erect residence at Court Ave. and Rembert St.; cost \$3300.

Tenn., Nashville.—Frank D. Marr awarded contract to R. A. Griffin & Son to erect residence; 60x50 feet; ordinary construction; steam heat; plans by Marr & Holman, Stahlman Bldg., Nashville. (Recently noted.)

Tenn., Nashville.—Charles B. Hooper awarded contract to erect residence on Eighteenth Ave.; two stories; brick veneer; ten rooms; cost \$5500; plans by Fletcher & Billie, Nashville.

Tex., El Paso.—J. E. Morgan awarded contract to F. E. Collins, El Paso, to erect dwelling; two stories; brick and stucco; cost \$4000.

Va., Norfolk.—F. C. Cross, Box 256, has plans by and awarded contract to W. G. & J. T. Sawyer to erect two dwellings; seven rooms and bath; ordinary construction; La-trobe stoves; gas and electric lighting; cost \$2400 each. (Recently noted.)

Va., Petersburg.—Harwood R. Hall awarded contract to E. J. Andrews, Petersburg, to erect residence; 12 rooms; frame; hot-water heat; cost \$6000; plans by S. Daley Craig, Petersburg.

Va., Portsmouth.—Charles Syer awarded contract at \$6200 to S. B. Hutchins, Jr., Commercial Bldg., Portsmouth, to rebuild burned dwelling on Naval Ave.; steam heat; slate roof.

W. Va., Charleston.—W. L. Goldsmith awarded contract to R. F. Mankin, Charleston, to erect residence; two stories; veneered brick; cost \$4297.

W. Va., Warwood.—Edward Remke awarded contract to H. A. Hawkins, Wheeling, W. Va., to erect residence; eight rooms; plans by George Dierlinger, Wheeling, W. Va.

GOVERNMENT AND STATE

Fla., Tallahassee.—Supreme Court Building. State Building Commission awarded contract at \$94,578 to George A. Clayton, Atlanta, Ga., to erect Supreme Court building; three stories and basement; 75x150 feet; plans by P. Thornton Marye, Candler Bldg., Atlanta, Ga. (Recently noted.)

Md., Baltimore.—Armory.—John Walsh & Sons, 1533 Maryland Ave., Baltimore, have contract for alterations and improvement to Fifth Regiment Armory; plans by Wyatt & Nolting, 1012 Keyser Bldg., Baltimore; cost about \$25,000.

Tex., Del Rio.—Postoffice.—Treasury Department, James Knox Taylor, supervising architect, Washington, D. C., awarded contract to P. T. Shields, 1712 N. Olive St., San Antonio, Tex., to erect postoffice; 88x60 feet; ordinary construction; cost \$65,000. Mr. Shields recently noted as lowest bidder. (See "Machinery Wanted.")

HOTELS

Fla., Miami.—C. T. Sheeler awarded contract to erect store and hotel annex building at Biscayne Blvd. and Harrington Ave.; two stories; 28x40 feet; lower floor for store; upper floor for hotel annex.

Fla., Ocala.—Richard S. Hall awarded contract at about \$60,000 to Jenkins & Williams to rebuild Montezuma Hotel; plans by Mark & Sheftall of Jacksonville, Fla. (Previously noted.)

La., Ruston.—Harris Hotel Co. awarded contract to erect hotel; 47x114 feet; three stories; steam heat; electric lighting; cost \$20,000; plans by Smith & Barthel, Monroe, La. (Compr. noted incorporated with \$50,000 capital stock.)

S. C., Sumter.—Special dispatch to Manufacturers Record says: "Local parties awarded contract to Wise Granite Co., Wise, N. C., to erect proposed hotel; 75x125 feet; 77 rooms; brick construction; cost \$75,000; Charles M. Robinson, Richmond, Va., architect."

MISCELLANEOUS

Ky., Louisville.—Stockyards.—Bourbon Stockyards Co. awarded contract to H. H. Baumeister to erect frame building; 200 feet square; two stories; cost \$10,000; plans by D. X. Murphy & Bros., Louisville. (Recently noted.)

Md., Dundalk.—Clubhouse.—Maryland Swimming Club awarded contract to Charles Milks, 232 N. Chester St., Baltimore, Md., to erect clubhouse; frame; addition to present structure; 44x60 feet; one story and lockers; mill construction; cost \$6000; plans by Mott & White, 322 N. Charles St., Baltimore, Md.

Mo., St. Louis.—Botanical Gardens.—Trustees of Missouri Botanical Garden awarded contract to Pearson U-Bar Co. of New York city to erect proposed greenhouses in Shaw's Garden; main section 300x80 feet, 60 feet high at extreme height of U arch; wing 152x47 feet at each end of main section; cost \$127,000.

N. C., Statesville.—Sanitarium.—Dr. H. F. Long will expend \$8000 to erect sanitarium; 56x65 feet; three stories; cost of heating, \$900 to \$1000; cost of lighting, \$3000; elevator, \$1000; plans by Wheeler & Stern, Charlotte, N. C.; contract recently noted awarded to T. L. Steele, Statesville.

Tenn., Chattanooga.—Hospital.—Chattanooga Tuberculosis Association awarded contracts amounting to about \$20,000 for work

on sanatorium as follows: To W. G. Wells & Co., brick work; John A. Stein, foundation; Chattanooga Lumber Co., lumber; Southern Queen Ranger Manufacturing Co., roof and tin work; John Trout & Co., stone work; Chattanooga Roofing & Foundry Co., steel structural work; contract for plumbing and heating not awarded; Fred C. Schneider, superintendent of construction. (Lately noted as awarding contract to Adams & Schneider of Chattanooga.)

Va., Cambria.—Hospital.—A. M. Showalter awarded contract to T. G. Moore, Cambria, to erect proposed hospital.

Va., Norfolk.—Car Barns.—Virginia Railway & Power Co. awarded contract at \$83,114 to J. H. Pierce of Norfolk to erect car barns, roundhouse and office building; brick; reinforced concrete; fireproof; structures will consist of two barns, one story each, 400x100 feet; office building, two stories, 40x100 feet, and roundhouse, one story, 100x100 feet. (Lately noted.)

SCHOOLS

Ala., Guin.—L. Y. Powers, chairman building committee, awarded contract to Sam T. Carroll of Tupelo, Miss., to erect Marion county high school. (Lately noted.)

Ala., Enterprise.—State, R. C. Connor, chairman of committee, awarded contract to Majors Construction Co., Troy, Ala., to erect high-school building recently noted; eight recitation-rooms and auditorium; steam and hot-water heat; electric lighting; slate roof; cost \$24,000; plans by Frank W. Lockwood, Montgomery, Ala. (See "Machinery Wanted.")

Miss., Longview.—Okibbeha County Agricultural High School Trustees awarded contract to Finas Hedfin, Ackerman, Miss., to erect academic building and dormitory; 58x78 feet and 81x48 feet, respectively; two stories; frame; mill construction; steam heat; electric lights; cost \$10,000; plans by M. M. Alsop, Houston, Miss. (Previously noted.)

Miss., Yazoo City.—Yazoo County Agricultural High School awarded contract at \$12,450 to Wm. Morford, Yazoo City, to erect dormitory and academic building for agricultural school; former two stories; 23 bedrooms; latter one story and basement; upper story to have four rooms 25x26 and 20x26 feet, and assembly hall 32x36 feet; septic tank sewerage system. (Previously noted.)

S. C., Columbia.—Richland County Superintendent of Education awarded contract to R. L. Graveley, Columbia, to erect Waverly colored school; cost \$4850.

S. C., Eau Claire.—Board of Education awarded contract at \$21,371 to Weston Broker, Columbia, S. C., to erect school; brick; 13 classrooms, teachers' room, office and auditorium; steam heat; electric lights; plans by Shand & Lafaye, Columbia. (Recently noted.)

Tex., Flatonia.—City awarded contract to Tadlock Bros., Box 427, Seguin, Tex., to erect school building; 60x70 feet; ordinary construction; metal tile roof; cost \$15,000; plans by R. L. Pierce, San Antonio, Tex. (Recently noted.)

Tex., Melvin.—School Board has plans by and awarded contract to A. J. Wilson, Cisco, Tex., to erect school building; 59x63 feet; cost \$7000. (Recently noted.)

Tex., Milford.—Texas Presbyterian College for Girls awarded contract to erect dormitory; cost \$35,000.

Va., Salem.—Roanoke Woman's College, J. C. Peavy, president, will expend \$52,856 to erect first of group of buildings; four stories and basement; 138x58 feet; heating not decided; electric lighting; plans by C. M. Robinson, Richmond, Va.; contract recently noted awarded to O. D. Oakley of Salem.

W. Va., Princeton.—Board of Education awarded contract to Witt Bros., Bramwell, W. Va., to erect high school; brick; gray sandstone trimmings; cost \$36,500; plans by A. F. Wysong, Princeton. (Recently noted.)

STORES

Ark., Argenta.—E. O. Manee, 221 Main St., awarded contract to Charles Thinson on commission basis to erect mercantile building recently noted to be erected at Little Rock, Ark.; 50x110 feet; semi-fireproof construction; cost \$10,000. (See "Machinery Wanted.")

D. C., Washington.—Woodward & Lothrop will expend \$200,000 to erect addition to department store; triangular in shape; eight stories; fireproof; steam heat; electric lighting; vault-light sidewalks; slag roof; plunger elevator; plans by F. B. Pyle, Equitable Bldg., Washington; contract recently noted awarded to F. T. Nesbit & Co., Washington.

Fla., Miami.—C. T. Sheeler awarded con-

tract to erect store and hotel annex building. (See "Hotels.")

Ga., Macon.—Dennenberg Company awarded contract to J. F. Griffin, Macon, to erect addition to store; five stories; 37,000 feet floor space; 63x118 feet; cost \$50,000.

Miss., Laurel.—Davidson Dry Goods Co. awarded contract to Burkes Construction Co., Hattiesburg, Miss., at \$15,788 (without heating and plumbing) for store building; brick; concrete and tile floors; cost of heating, \$4000; cost of lighting, \$2000; plans by Robert E. Lee, Hattiesburg, Miss. (Recently noted.)

N. C., Rocky Mount.—E. Epstein awarded contract to D. J. Rose & Co., Rocky Mount, to erect business building at Main and Tabor Sts.; two stories; ordinary construction; 55x54 feet; first floor for store, with plate-glass front; basement for barber shop; second floor for offices and photograph gallery; plans by J. C. Stout, Rocky Mount. (Previously noted.)

S. C., Lexington.—Mrs. A. D. Kaufman awarded contract to H. C. Van Ormer & Son, Pittsburgh, Pa., to rebuild burned store on Main St.

S. C., Lexington.—Home National Bank awarded contract to H. C. Van Ormer & Son, Pittsburgh, Pa., to erect store, bank and office building. (See "Bank and Office.")

Tenn., Memphis.—Henry Halle awarded contract to Fred B. Young & Son, 512 Memphis Trust Bldg., Memphis, to erect store and apartment building; 25x50 feet; ordinary construction; brick; cost \$10,000; plans by Jones & Furbinger, Porter Bldg., Memphis. (Recently noted.)

Tex., Bishop.—Jenkins & Cobb awarded contract to M. A. Turner, Bishop, to erect store building; 75x60 feet; cost \$7000; plans by M. J. Ehlers, Bishop. (Recently noted.)

Tex., Eagle Lake.—Lee Hughes, Richmond, Tex., has plans by and awarded contract to O. J. Howard, Eagle Lake, to erect two business buildings; 30x50 feet and 31x50 feet; ordinary construction; combination graveled roof; cost \$5000 to \$7000, respectively. (Recently noted.)

Tex., Houston.—Mrs. Frances Dooley awarded contract to Lisle-Dunning Construction Co., Oklahoma City, Okla., and Birmingham, Ala., to erect store and office building at Franklin and Milam Sts.; reinforced concrete; fireproof; three stories and basement; six stores on first floor; cost \$45,000; plans by Jones & Tabor, 505-506 Binz Bldg., Houston. (Recently noted.)

Tex., Madisonville.—W. D. Evans awarded contract to erect store building.

Tex., Madisonville.—T. T. Dean awarded contract to erect store building.

Tex., Waxahachie.—S. W. Durram will expend \$18,000 to erect department store; 40x86 feet; ordinary construction; brick; electric lighting; prism sidewalk lights; gravel roof; cost of elevator, \$2000; plans by H. A. Overbeck, Dallas, Tex.; contract recently noted awarded to J. S. McCanless, Waxahachie.

Va., Richmond.—R. Lee Peters awarded contract to B. F. Cosby, 11 E. Marshall St., Richmond, to erect store building; 22x93 feet; brick, wood and concrete; cost of heating plant, \$500; electric lighting; freight elevator; cost \$8000; plans by C. K. Howell, Richmond. (Recently noted.)

W. Va., New Martinsville.—Shiben Bros. awarded contract to Dayton & Francis, New Martinsville, to erect proposed building; five stories; cost \$25,000, exclusive of excavating, which will be done by owners.

WAREHOUSES

Okla., Oklahoma City.—George Witter Investment Co. awarded contract to Williams-Gethman Construction Co., Oklahoma City, to erect proposed warehouse to be occupied by B. F. Avery & Sons Plow Co.; three stories and basement; heavy mill construction; 40,000 square feet floor space; cost \$45,000.

Witter Refrigerating Machinery.

Among the recent sales of ice-making and refrigerating machinery made by the Witter Manufacturing Co. of Milwaukee are the following: To the French Market Ice Manufacturing Co., New Orleans, a 100-ton refrigerating plant and a 90-ton ice-making plant with a 22x42-inch Corliss engine; Artesian Ice & Cold-Storage Co., Texas City, Tex., a 25-ton can ice plant and brine refrigerating system with a 15x30-inch Corliss engine; the Shiner Brewing Association, Shiner, Tex., a 23-ton refrigerating plant direct connected to a 10x30-inch Corliss engine; Tyler & Tyler, ice manufacturers, Richmond, Va., a 40-ton plate-ice plant and a 14 28x36-inch tandem compound Corliss engine; together with many other sales in various parts of the country.

RAILROAD CONSTRUCTION

RAILWAYS

Ala., Selma.—The Southern Railway Co., says a report, will spend about \$200,000 to improve its lines between Birmingham, Selma and Mobile, beginning with the construction of second track, and reconstruction of the present track. W. H. Wells is chief engineer of construction at Washington, D. C.

Ala., Tuscaloosa.—Tracklaying is reported begun on the Tuscaloosa Mineral Railroad from Brookwood toward Tuscaloosa.

Ark., Crossett.—A. Trieschman, one of the incorporators of the Crossett, Monticello & Northern Railway Co., says that its plans will be announced in a few weeks, the charter just having been obtained. (See Manufacturers Record, March 28.)

Ga., Cordele.—E. T. Young, a civil engineer, is reported working on a plan to build an electric railway from Cordele to Albany, Ga., about 35 miles. He is said to represent a company with headquarters in St. Louis, Mo.

Ga., Lagrange.—Concerning the report that the Chamber of Commerce was taking steps to secure construction of a railroad from Lagrange to Chipley, about 20 miles, Lester T. Busch says that the proposition is yet in only tentative form.

Ky., Ashland.—The Williamson & Pond Creek Railroad Co. of Ashland is chartered in the interest of the Norfolk & Western Railway to build a line from Williamson, W. Va., up Pond Creek, in Kentucky, 11 miles, this being in Pike county, on the Virginia border. The incorporators are L. E. Johnson, Roanoke, Va., who is president of the Norfolk & Western; Joseph I. Doran, its general counsel, Philadelphia; Wm. G. McDowell of the same city, vice-president; and W. A. Ginn of Ashland, Ky. In addition to Messrs. Johnson, Ginn and Doran, the directors of the new road include N. D. Maher of Roanoke and George P. Johnson of Bluefield, W. Va., both being officers of the N. & W., and Henry Brannon of Portsmouth, O.

Ky., Beattyville.—The Turkey Foot Lumber Co., says a report, will build a railroad up Sturgeon Creek to develop timber lands.

Ky., Frankfort.—The Kentucky Central Electric Railway Co. is chartered at Wilmington, Del., with authorized capital of \$1,000,000; incorporators, M. L. Rogers, S. E. Roberson and H. W. Davis of Wilmington. Plans not announced.

Ky., Hickman.—The Chicago, Memphis & Gulf Railroad Co. is reported surveying for an extension from Hickman to Moscow, 10 miles. S. G. Latta is president and general manager at Dyersburg, Tenn. W. O. McMillan is chief engineer and P. Hawkins assistant.

La., New Orleans.—The New Orleans Terminal Co., controlled by the Southern Railway and the Frisco system, according to a report quoting an officer, has appropriated \$1,000,000 for improvements, including team tracks. R. B. Fowler is general manager.

Md., Towson.—The Towson & Cockeysville Electric Railway Co. has resumed construction between Towson and Lutherville, work having been suspended during the winter. F. J. Begg, Towson, is chief engineer, and James S. Nussear, Lutherville, Md., treasurer.

Miss., Laurel.—The Wausau Southern Railroad from Laurel about 30 miles to a point in Greene county will, it is reported, be completed about May 1.

Miss., Meridian.—The Mississippi Railroad Co. has been incorporated to build a line from the Northwest corner of township 12, range 17, in Kemper county, southeast 25 miles to Electric Mills, on the Mobile & Ohio Railroad, and thence through the same county to the Alabama boundary, about 15 or 20 miles. It will develop timber lands. Incorporators are T. B. Brittingham, Madison, Wis.; G. C. Hixon, Chicago, Ill.; T. M. Hixon, La Crosse, Wis.; F. J. Hughes, Electric Mills, Miss.; E. S. Bostick, S. Eastland, R. E. Wilbourne and W. E. Baskin, all of Meridian, Miss.

Mo., Bismarck.—Edward T. Eversole, attorney for the Bismarck, Bellevue Valley & Western Railway Co., Potosi, Mo., says that 20 miles of line are to be built from Bismarck to Sunlight, Mo., via Caledonia and Belgrade. It will include two single-span bridges. The country traversed is generally rolling. E. E. Evans, 924 Chemical Bldg., St. Louis, is president.

Mo., St. Louis.—The Grandview Railroad Co., it is reported, will begin tracklaying immediately for its proposed line from St. Louis to the Continental Cement Works at Montezano Park, in Jefferson county.

President is Frederick Herkert; vice-president, W. A. Miller. George W. Bamhoff is also prominently interested.

N. C., Broadway.—The Atlantic & Western Railroad Co. will extend from Broadway to Lillington, 17 miles, and also, it is reported, to Goldsboro. J. H. Winder, Raleigh, N. C., is president.

N. C., Gastonia.—R. R. Babington, one of the directors and also a vice-president of the North Carolina Interurban Railway Co., Gastonia, N. C., is quoted saying that construction is assured for the proposed line from Gastonia to Asheville via Dallas, Cherryville, Shelby, Henrietta, Caroleen, Forest City, Rutherfordton, Chimney Rock, Devil's Cave, Hickory Nut Gap and Biltmore, 127 miles.

N. C., Kinston.—A charter has been prepared for the Kinston Terminal Co., which proposes to build a railroad from Kinston to Richlands, N. C., about 25 miles, and it is expected to begin the construction soon. R. C. Strong and others are interested.

N. C., Randleman.—An election will be held April 8 to vote on bonds in aid of the Randolph & Cumberland Railroad. E. W. Shedd, Carthage, N. C., is chief engineer.

N. C., Waynesville.—The Dover Lumber Co. will, it is reported, build a railroad from Waynesville to the head of Jonathan's Creek to develop timber land.

Okla., Muskogee.—The McCabe-Steen Construction Co. of Kansas City is reported awarded the contract for construction of 500 miles of new lines for the Missouri, Oklahoma & Gulf Railroad and will establish its first camps near Wagoner, Okla. Headquarters in the field will be at Fairland, Okla. This will cover the construction north to Pittsburg, Kans.; also from Henryetta to Oklahoma City, Okla., and from Denison to Dallas, Tex. An extension to Fort Smith, Ark., is under consideration. J. J. Harrison, Muskogee, Okla., is chief engineer for the railroad.

Okla., Wagoner.—The Hancock-McMahon Construction Co. of Wagoner is reported given the contract for all concrete work, including bridge piers on the extension of the Missouri, Oklahoma & Gulf Railroad from Wagoner, Okla., to Pittsburg, Kans.

S. C., Georgetown.—The Georgetown & Western Railroad Co. it is reported, will continue to push plans for the construction of an extension to connect with the South Carolina Western Railway that will in turn connect with the Seaboard Air Line. R. S. Farr, Georgetown, S. C., is president and general manager.

Tenn., Murfreesboro.—J. L. Parkes, local representative of the Murfreesboro Electric Railway Co., says the line to be built is 55 miles from Nashville via Murfreesboro to Woodbury, Tenn. Character of country ranges from comparatively level to hilly. Directors are R. T. Wilson, president; R. L. Burch, Joseph Frank and T. G. Tinsley, all of Nashville, and J. L. Parkes of Murfreesboro, Tenn. Date not decided when bids for construction will be received. Another report says that charter has been filed at Nashville; capital \$50,000. It is proposed to also connect with Clarksville, Springfield, Cornersville and Lewisburg, Tenn., which would make a total of more than 100 miles of line.

Tenn., Nashville.—The Foster-Creighton-Gould Company, First National Bank Bldg., Nashville, has been awarded contract by the Louisville & Nashville Railroad for a steel and concrete bridge over the Cumberland River at Nashville, the structure to be 3300 feet long, with seven spans, the longest being 300 feet and the shortest 115 feet. The same firm also has contract for 52 smaller bridges on the new double-track extension.

Tenn., Nashville.—A letter from the Nashville, Chattanooga & St. Louis Railway Co. says there is no truth in the press report that it will build second track all the way from Nashville to Chattanooga.

Tex., Austin.—The Morey-Faulhaber Construction Co. of St. Louis has taken out a Texas charter to engage in railroad construction. It has a contract for five miles on the Houston & Texas Central Railway near Caldwell, Tex., but is expected to begin some more extensive work. Capital stock, \$5000. Incorporators and directors, Richard Morey, E. A. Faulhaber and Frank Donze of St. Louis; W. H. Prentice, Caldwell, Tex.; D. K. Woodward, Jr., Austin, Tex.

Tex., Bronson.—Survey for the W. H. Knox Lumber Railroad from Bronson via Bronson to Hemphill, Tex., about 25 miles, is reported proceeding rapidly.

Tex., Corpus Christi.—Plans to build an in-

terurban railway from Corpus Christi to Ward Island, six miles, are reported progressing. The Board of Trade may be able to give information.

Tex., Dallas.—E. P. Turner is reported saying that he and others are working on a plan for the construction of an independent system of interurban railways under the name of the Dallas and Western Interurban Railway Co. The lines will radiate from Dallas in several directions.

Tex., Dallas.—Charter is filed for the Southern Traction Co., which is to build an interurban electric railway from Dallas to Waco, Tex., with a branch from Ferris to Corsicana, altogether about 135 miles. J. F. Strickland, C. W. Hobson and Osce Goodwin of Dallas are the incorporators. Capital, \$7,500,000. Directors are F. N. Drane, J. E. Whiteselle and J. A. Thompson of Corsicana, W. W. Batchelor of Ferris, J. H. Miller, Geo. W. Coleman and J. Lee Penn of Waxahachie, W. R. McDaniel of Milford, W. J. Neale, W. W. Seely and W. D. Lacy of Waco, J. Baldrige of Ennis, J. K. Parr of Hillsboro, W. R. Glasgow of West, J. F. Strickland, A. A. Jackson and C. W. Hobson of Dallas, Tex.; Wm. R. Compton, A. T. West and A. T. Perkins of St. Louis, Mo. The Southern Engineering & Construction Co., 1312½ Commerce St., Dallas, is the contractor, and is staking out the route. Luther Dean is chief engineer. Burr Martin is president of the construction company. President Strickland of the railway is reported saying that 500 teams have been secured to begin grading immediately.

Tex., Houston.—G. W. Thompson of St. Louis, says a report from New Orleans, where the company's headquarters are, has been awarded a contract by the International & Great Northern Railroad Co. to relay with 80-pound rails the line from Houston to Fort Worth; also for ballasting the Texas & Pacific's line from New Orleans to Marshall, Tex., with gravel. T. J. Freeman, New Orleans, La., is president.

Tex., Memphis.—J. M. Elliott, attorney for the Altus, Lubbock, Roswell & El Paso Railway Co., is quoted saying that construction from Memphis to Lubbock, Tex., 132 miles, will begin May 15. W. W. West of Houston, Tex., and others in Chicago control the road.

Tex., San Antonio.—Contracts are reported signed and other arrangements completed for the construction of the San Antonio, Uvalde & Gulf Railway's proposed extension from Pleasanton to Fowler, Tex. J. E. Franklin of St. Louis is president; E. Breaker, San Antonio, Tex., is chief engineer. Headquarters in the Gibbs Building at San Antonio. M. E. Leming is vice-president in charge of construction.

Tex., San Antonio.—Shattuck & Edinger of San Francisco are reported awarded the contract for the construction of the San Antonio, Rockport & Mexican Railway from San Antonio to Crowther, Rockport and Harbor Island, about 175 miles. Robert Pattinson of London closed it for the English syndicate. Work is to begin April 1.

Va., Richmond.—Charter is filed for the Richmond & Rappahannock River Railway Co., which has acquired the rights and franchises of the Richmond, Urbanna & Peninsula Railway Co. The proposed line from Richmond to the Rappahannock River will, it is said, be about 60 miles long. It may also build branches, none to exceed 50 miles in length. Joseph E. Willard of Fairfax, Va., is president; Charles L. Ruffin of Burnsville, Va., vice-president; R. B. Campbell of Richmond, secretary-treasurer; O. E. Parish is assistant secretary-treasurer. Besides Messrs. Willard and Ruffin the directorate includes A. M. Gover, A. R. Holladay, Thos. P. Bryan, R. N. Pollard, Chris. Manning, Jr., and Clyde W. Saunders. Capital stock authorized is \$300,000.

Va., Roanoke.—The L. H. Vaughan Contracting Co. of Roanoke is reported to have a contract with the Virginian Railway for filling in trestles and building sidetracks at various points, including Rock, Clarksville and Pax, W. Va.; also a contract with the Seaboard Air Line to build a yard at Norlina, N. C.

STREET RAILWAYS

Ala., Mobile.—An ordinance has been adopted granting franchise to the Mobile Light & Railroad Co. for an electric railway on Lexington Ave. from Spring Hill Ave. to Davis Ave. Some double-tracking is also to be done.

Ala., Mobile.—The Mobile Light & Railroad Co. contemplates building an extension on Lexington Ave., between Spring Hill and Davis Aves.

D. C., Washington.—H. Bradley Davidson, president of the Chevy Chase to Great Falls

Land Co., is reported saying that contract for the proposed electric railway from Chevy Chase to Great Falls will be let immediately. Connection will be made with the lines of the Washington Railway & Electric Co. and the Capital Traction Co.

D. C., Washington.—A bill has been introduced in the United States Senate providing for the extension of the lines of the Washington Railway & Electric Co. and the City & Suburban Railway Co. Clarence F. Norment is president of both companies.

Ky., Louisville.—The Louisville Railway Co. has begun construction of the cross-town line at Barret and Winter Aves. to connect Parkland with the Highlands.

N. C., Asheville.—The Asheville Power & Light Co., with authorized capital of \$2,000,000, has been chartered to take over the Asheville Street Railway, and it is expected that extensions and improvements will be made.

H. H. Carr, H. P. Dalton and F. H. Briggs of Raleigh are the incorporators. The Carolina Power & Light Co., of which Col. Chas. E. Johnson of Raleigh is president, is reported to be back of the plan.

Tenn., Nashville.—The Nashville Railway & Light Co., says a report, will apply for franchise to build extensions to Belle Meade and to Inglewood.

W. Va., Martinsburg.—The City Council has finally passed the ordinance granting a street-railway franchise to C. E. Martin and associates. It will now go to the Board of Affairs for approval. Construction must begin within a year.

MACHINERY, PROPOSALS AND SUPPLIES WANTED

Manufacturers and others in need of machinery or supplies of any kind are requested to consult our advertising columns, and if they cannot find just what they wish, if they will send us particulars as to the kind of machinery or supplies needed we will make their wants known free of cost, and in this way secure the attention of manufacturers and dealers throughout the country. The Manufacturers Record has received during the week the following particulars as to machinery and supplies wanted.

Alum Plant.—Emory & Eisenbrey, 1103 Harrison Bldg., Philadelphia, Pa., will receive at an early date bids to construct buildings and furnish equipment for North American Chemical Co.'s Urbana (Ohio) plant to manufacture alum from halosite found near Rome, Ga.; one and two-story fireproof construction; daily capacity 20 tons; cost \$25,000.

Automobiles.—Dr. Samuel T. Donda, Locker, Tex., wants information and prices on steam-operated automobiles; fuel cost; power to pull on sandy roads.

Bakery Equipment.—Manufacturers Sales Co., 426 W. Walnut St., Springfield, Mo., wants to correspond with manufacturers of baking, biscuit and cracker machinery; wants prices on complete equipment for cracker and biscuit factory.

Baking Machinery.—See "Candy Machinery, etc."

Belting.—See "Electrical Machinery, Gasoline Engines, etc."

Belting.—Marion Manufacturing Co., Marion, N. C., wants prices on belting.

Belting.—W. M. Ritter Lumber Co., G. Ray Powers, superintendent, Proctor, N. C., wants second-hand leather belting for making hand leathers and workmen's aprons.

Boat Spikes, etc.—Proposals received at office of General Purchasing Officer, Isthmian Canal Commission, Washington, D. C., until 10.30 A. M. April 15, then opened, for furnishing boat spikes, poultry netting, portable forges, paint brushes, scythes, mess-kits, spoons, asbestos packing, rubber belting, wool waste, magnesia pipe covering, railway flings, coal tar, beeswax, calcium carbide, asbestos cement, muriatic acid, linseed oil, library paste, scratch pads and yellow pine lumber; blanks and general information relating to this circular (No. 699) obtained from this office or offices of assistant purchasing agents, 24 State St., New York, and 615 Whitney-Central Bldg., New Orleans; also from U. S. Engineer offices in Baltimore, Philadelphia, Pittsburgh, Boston, Buffalo, Cleveland, Cincinnati, Chicago, St. Louis, Detroit, Milwaukee, St. Paul, Chattanooga, Louisville, Mobile and Galveston; Commercial Club, Kansas City, and Chamber of Commerce, Quincy. F. C. Boggs, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

Boiler.—See "Laundry Equipment."

Boilers.—Marion Manufacturing Co., Marion, N. C., wants prices on boilers.

Boilers.—See "Engine, Boilers, etc."

Boilers.—City of Houston, Tex., wants prices on two boilers. Address City Secretary.

Bottling Machinery.—See "Carbonating Machinery."

Bridge Construction.—Bids received at Tazewell County Clerk's office, Tazewell, Va., until noon April 12 for construction of steel bridge at Cedar Bluff, Va.; plans and specifications on file with clerk; certified check \$50; further information furnished by P. St. J. Wilson, State Highway Commissioner, Richmond, Va.

Brooms.—H. P. Dixon, general delivery, Atlanta, Ga., wants addresses of manufacturers of corn brooms for household use.

Building Construction and Materials.—See "Alum Plant."

Building Materials.—P. T. Shields, 1712 N. Olive St., San Antonio, Tex., wants prices on plumbing, terra-cotta roofing, steel and iron columns, mill work, lighting fixtures, etc., for United States postoffice at Del Rio, Tex.

Building Materials.—Robert L. Gravelly, 1004 Pine St., Columbia, S. C., wants to correspond with manufacturers of builders' supplies; view to agency.

Building Materials.—J. M. McMichael, Charlotte, N. C., wants prices on slate roof, plumbing, hardwood floors, tile roof, structural steel, wrought-iron stairway, gravel roof, plate glass, etc.

Building Materials.—L. R. Benz, 115 W. Hill Ave., Valdosta, Ga., wants catalogues and samples from manufacturers of building materials.

Building Materials.—Dr. J. S. Clifford, Charlotte, N. C., wants prices on stained shingle roofing, hardwood floors, plumbing and concrete.

Building Materials.—Fred L. Bonfoey, Charlotte, N. C., wants prices on stained shingle roof, hardwood floors and plumbing.

Building Materials.—A. Morris McDonald, Charlotte, N. C., wants prices on slate and tin roofing, plumbing and hardwood floors.

Cable.—Office of Chief Signal Officer, Capt. R. J. Burt, disbursing officer, War Department, Washington, D. C., receives bids until April 12 for furnishing four miles cable, type 324, 20-pr, submarine, paper insulated, with specifications 427-C, 96-C, drawing 106, in one-half mile lengths; also seven miles cable, type 321, 10-pr, submarine, paper insulated, in accordance with specifications 427-C, 96-C, drawings 106, in one-half mile lengths; furnished on new reels; reels remain property of contractor and returned.

Cable.—Board of Fire Commissioners, Fire Department, Baltimore, Md. Sealed proposals, addressed to Board of Awards, received by City Register, City Hall, until 11 A. M. April 10 for furnishing 59,000 feet, more or less, underground cable; specifications upon application to secretary of department; certified check, \$500; P. W. Wilkinson, secretary.

Canal Construction.—Everglade Land Sales Co., R. M. Price, secretary, Miami, Fla., receives bids until April 6 to construct 12-mile canal—Royal Glade drainage canal; bottom width, 20 feet; side slopes, 1 to 1; average depth, 6.5 feet; involves removal of 470,000 cubic yards earth and 16,000 cubic yards rock; certified check \$1000; information furnished by W. J. Kackley, engineer, Dorn Bldg., Miami, where plans, profiles, specifications and bidding sheets may be obtained.

Candy Machinery, etc.—G. David Ricaurte, Pasto, Narino, Colombia, S. A., wants catalogues and prices on machinery to manufacture candy, bon-bons, cakes, etc.; view to representation on commission or other basis.

Canning Machinery.—Peele Peanut Co., C. T. Peele, Roxobel, N. C., wants prices on machinery for potato cannery.

Carpet Machinery.—H. M. Shaw, Oxford, N. C., wants data and prices on machinery for manufacturing carpet for buggy bottoms; has hydro-electric power.

Carbonating Machinery.—G. David Ricaurte, Pasto, Narino, Colombia, S. A., wants catalogues and prices on equipment

for manufacturing mineral waters, carbonators, bottling machinery, siphons, containers, retorts, salts, corks, tanks, filters, etc.; view to representation on commission or other basis.

Ceilings.—E. O. Mancees, 221 Main St., Argenta, Ark., wants prices on tin ceilings.

Chain, Journal Bearings, etc.—Proposals received at office of General Purchasing Officer, Isthmian Canal Commission, Washington, D. C., until 10.30 A. M. April 10 for furnishing chain, journal bearings, galvanized steel, sheet zinc, sheet copper, gaskets, solder, steel washers, vitrified sewer pipe, lead pipe, brass tubing, pipe fittings, valves, cocks, grease cups, wrenches, machetes, hammers, tool handles, corn brooms, hinges, files, paint brushes, galvanized buckets, water coolers, lantern globes, life preservers, hose, packing, leather washers, wool waste, emery cloth, railway flags, chamol skins, sponges, bag board, lime, gasoline, linseed oil, red lead, venetian red, yellow ochre and ivory black. Blanks and general information relating to this circular (No. 697) may be obtained from this office or offices of assistant purchasing agents, 24 State St., New York, and 614 Whitney-Central Bldg., New Orleans; also from U. S. Engineer offices in Baltimore, Philadelphia, Pittsburgh, Boston, Buffalo, Cleveland, Cincinnati, Chicago, St. Louis, Detroit, Milwaukee, St. Paul, Chattanooga, Louisville, Mobile and Galveston; Commercial Club, Kansas City, and Chamber of Commerce, Quincy. F. C. Boggs, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

Cigarette Machinery.—G. David Ricaurte, Pasto, Narino, Colombia, S. A., wants catalogues and prices on cigarette machinery; view to representation on commission or other basis.

Corn Mills, etc.—See "Electrical Machinery, Gasoline Engines, etc."

Crematories.—Proposals received at Bureau of Yards and Docks, Navy Department, Washington, D. C., until 11 A. M. April 13, then opened, for garbage crematories at navy-yards, Puget Sound, Wash., and Norfolk, Va., and at Naval Training Station, San Francisco, Cal.; plan and specifications obtained on application to bureau or to commandant of navy-yards or station named. Wm. M. Smith, Acting Chief of Bureau.

Crusher.—Meem & Kinnier, Lynchburg, Va., want 100 or 125 yards daily capacity jaw crusher and boiler to operate same.

Crushing Machinery.—Star Fish & Oyster Co., Mobile, Ala., wants information and prices on oyster shell crusher machine.

Distilling Equipment.—B. F. Wiggins, Monroeville, Ala., wants data and prices on equipment to distill turpentine from stumps and fat logs.

Drainage Construction.—Commissioners Grand Falls Drainage District of Ward County, H. E. Moore, president, Grand Falls, Tex., receive bids until April 16 for construction of drainage system; profiles and specifications on file; \$33,000 bonds issued.

Dredging.—Baltimore (Md.) Board of Awards receives bids at office of City Register, City Hall, until April 10 for dredging; certified check \$1000; specifications at office of Harbor Board; O. F. Lackey, Harbor Engineer.

Drilling Equipment.—Copeland-Ingalls Shale Brick Co., Birmingham, Ala., wants prices on gasoline drilling outfit to drill holes up to 40 feet in shale bank.

Electric Lamps.—Office of Superintendent of Lamps and Lighting, Robert J. McCuen, City Hall, Baltimore, Md. Sealed proposals received by Board of Awards, care of City Register, until 11 A. M. April 10 for furnishing incandescent electric lamps or bulbs; bids in accordance with specifications, to be had at office of Superintendent.

Electric Plant.—M. I. Flowers, Welder, Tex., wants prices on electric plant of 20-light capacity.

Electrical Equipment.—Eagle Lake Water & Light Co., Box 291, Eagle Lake, Tex., wants electrical apparatus and supplies.

Electrical Machinery.—See "Hoist."

Electrical Machinery.—G. David Ricaurte, Pasto, Narino, Colombia, S. A., wants catalogues and prices on electrical appliances, including whole machines; parts and accessories for house and street lighting, for automobiles, power, etc.; insulators and accessories, wires, cables, lamps, etc.; also telegraph and telephone supplies, batteries, accumulators and electrical novelties; view to representation on commission or other basis.

Electrical Machinery, Gasoline Engines, etc.—Smyrna Cotton Oil & Gln Co., M. V. Ruff, manager, 409 Rhodes Bldg., Atlanta, Ga., wants prices on electric motors,

gasoline engines, dynamos, leather belting, corn mills, feed grinders, wire fencing, bone mills, steam machinery for cooking stock feed.

Electrical Machinery.—Proposals, endorsed "Proposals for motor generator sets," received at Bureau of Yards and Docks, Navy Department, Washington, D. C., until 11 A. M. April 27, then and there opened, for two 100-kilowatt motor generator sets and controlling panels at Navy-yard, Puget Sound, Wash. Specifications on application to bureau or to commandant of yard named. Wm. M. Smith, Acting Chief of Bureau.

Electrical Machinery.—Schwartz Sheet Metal Works, Houston, Tex., wants prices on three-phase motor, 10 or 20 horse-power.

Electric Plant, etc.—Bids received until 2 P. M. April 22 for electric-light plant, steam-heating and power plant, electric wiring, plumbing and sewerage for Mississippi Normal College at Hattiesburg, Miss.; for plans and specifications apply to R. H. Hunt, architect, Chattanooga, Tenn.; proposals to be addressed to T. P. Scott, secretary building committee, care Governor's office, Jackson, Miss.

Electrical Machinery.—See "Water-works Materials, etc."

Electric Motors.—City of Houston, Tex., wants prices on four electric motors. Address City Secretary.

Elevator.—P. T. Shields, 1712 N. Olive St., San Antonio, Tex., wants prices on elevator for United States postoffice at Del Rio, Tex.

Elevator.—A. C. Bonkemyer, secretary American Motor Co., Box 119, Greensboro, N. C., wants prices on electric elevator, 8x18 feet, complete with motors and all equipment.

Elevator.—E. R. Happ, Fourth National Bank Bldg., Macon, Ga., wants prices on electric elevator for two stories and basement garage for Harold Banking & Savings Co.

Engine.—Marion Manufacturing Co., Marion, N. C., wants prices on low-pressure engine.

Engine, Boilers, etc.—Troy Cross Arm Co., Troy, N. C., wants second-hand steam plant, comprising about 400-horse-power engine, boilers and belt.

Engine and Boiler.—Smyrna Cotton Oil & Gln Co., M. V. Ruff, manager, 409 Rhodes Bldg., Atlanta, Ga., in market for 150-horse-power engine and boiler.

Engines.—See "Electrical Machinery, Gasoline Engines, etc."

Fans.—City of Houston, Tex., wants prices on two-fan ventilating system of school building. Address City Secretary.

Feed Mills.—See "Electrical Machinery, Gasoline Engines, etc."

Fertilizer Mixer.—Smyrna Cotton Oil & Gln Co., M. V. Ruff, manager, 409 Rhodes Bldg., Atlanta, Ga., in market for fertilizer mixer.

Forming Rolls.—Schwartz Sheet Metal Works, Houston, Tex., wants prices on four or five-foot forming rolls.

Fiber Machinery.—O. L. Hardgrave, consular agent, Ruanan, Honduras, wants machinery to remove husk from coconuts, clean color fiber from husks and spin fiber into yarn; to handle 20,000 nuts in 10 hours; wants to correspond with manufacturers.

Gap Shears.—Schwartz Sheet Metal Works, Houston, Tex., wants prices on gap shears with 15 or 18-inch gap; foot power.

Gas Stoves.—J. R. Ellis, 305 N. McNeill St., Memphis, Tenn., wants prices on gas stoves.

Ginning Machinery.—Smyrna Cotton Oil & Gln Co., M. V. Ruff, manager, 409 Rhodes Bldg., Atlanta, Ga., in market for four 70-saw cotton gins.

Grain Elevators.—Farmers' Elevator & Supply Co., Virgil Hickman, president, Princeton, Mo., wants prices on machinery for grain elevators; intends to erect three 20,000 bushels and one 25,000 bushels capacity.

Hardware.—Herman Dulliere, Saventhem, Belgium, wants prices on hardware; view to agency on commission.

Heating Plant.—Methodist congregation, Rev. John L. Franklin, pastor, Lincolnton, Ga., wants prices on hot-air heating plant.

Heating Plant.—Sealed proposals received by Board of Education, Lexington, Ky., until April 11 for material and work to complete heating and ventilating system in new school building. In accordance with plans and specifications on file in office of J. O. H. Simrall, clerk Board of Education, Lexington, and in office of architects, Garber & Woodward, 906 Andrews Bldg., Cincinnati, O.; price of labor and materials stated separately.

Heating Plant.—P. T. Shields, 1712 N.

Olive St., San Antonio, Tex., wants prices on heating plant for United States postoffice at Del Rio, Tex.

Heating Plant.—State, R. C. Connor, chairman of committee, Enterprise, Ala., wants bids on steam or hot-water heating plant for \$24,000 school.

Heating System.—Texas Amusement Co., Galveston, Tex., wants to correspond with companies installing combination hot-air heating system which can be used as ventilating plant in summer.

Hoist.—D. H. Stoll Company, Military Rd. and Lansing St., Buffalo, N. Y., wants electric hoist to be used in connection with traveling crane.

Hoisting Machinery, etc.—Beasley Land Clearing & Manufacturing Co., Dothan, Ala., will consider purchasing hoisting engine factory with steel plant, or would purchase patterns for 25-horse-power double-drum link hoisting engine or engines of this size; steel construction.

Incinerator.—City of Cordele, Ga., wants addresses of manufacturers of incinerating outfits for garbage disposal; population of town 10,000; T. J. McArthur, city physician.

Lamps.—See "Electrical Machinery."

Laundry Equipment.—Samuel J. Stein, Delta Laundry, Greenwood, Miss., wants prices on conveyor dryroof, 26-inch extractor, two washers and one collar dampener; will also install 50-horse-power boiler.

Lighting Fixtures.—J. R. Ellis, 305 N. McNeill St., Memphis, Tenn., wants prices on electric fixtures.

Locomotives.—E. G. Herndon, Home Life Bldg., Washington, D. C., wants to correspond with manufacturers of gasoline industrial locomotives; desires full particulars and prices.

Lumber.—Navy Department, Bureau of Supplies and Accounts, Washington, D. C., receives bids until April 30 for furnishing 2500 feet cabinet white oak, 25,000 feet Virginia, North Carolina and Georgia pine, 14,000 feet North Carolina and claspboard pine, 15,000 feet white pine and 3000 feet spruce; schedule 4457; delivery Navy-yard, Washington, D. C.; for schedules apply to navy pay office nearest navy-yard.

Magnetic Rods.—W. H. Johnson, Easley, S. C., wants addresses of manufacturers of or dealers in magnetic rods or needles for locating gold and silver.

Match Machinery.—G. David Ricaurte, Pasto, Narino, Colombia, S. A., wants catalogues and prices on machinery to manufacture matches; view to representation on commission or other basis.

Metal Lath.—J. Bounds, Moss Point, Miss., wants addresses of manufacturers of metal lath.

Mill Supplies.—Marion Manufacturing Co., Marion, N. C., wants prices on mill supplies for cotton factory.

Moving-picture Equipment.—G. David Ricaurte, Pasto, Narino, Colombia, S. A., wants catalogues and prices on moving pictures, machines for making them, films, etc.; view to representation on commission or other basis.

Naval Supplies.—Proposals received at Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 10 A. M. April 23 to furnish at Navy-yard, Washington, D. C., etc., naval supplies as follows: Schedule 4433, electric blueprinter machine; schedule 4439, auto-ambulance; schedule 4440, transits, unspun cotton. Applications for proposals should designate schedules desired by number. Blank proposals furnished upon application to bureau. T. J. Cowie, Paymaster-General U. S. N.

Naval Supplies.—Proposals receive at Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 10 A. M. April 23 to furnish at Navy-yard Norfolk, Va., naval supplies as follows: Schedule 4436, hand dump car; schedule 4441, spiral steel springs, paint drier. Applications for proposals should designate schedules by number. Blank proposals furnished upon application to navy pay office, Norfolk, or to bureau. T. J. Cowie, Paymaster-General, U. S. N.

Oil Mill.—Smyma Cotton Oil & Gin Co., M. V. Ruff, manager, 409 Rhodes Bldg., Atlanta, Ga., in market for cotton-oil mill equipment.

Paving.—Board of Control, Norfolk, Va., receives bids until 12.30 P. M. April 8 for laying 1700 square yards asphalt paving on Westover Ave. from Colley to Colonial Ave.; proposal forms, instructions to bidders, specifications and contract may be had from W. T. Brooke, City Engineer.

Paving.—Paving District No. 9, Ed. D. Ehrman, secretary, Helena, Ark., receives

bids until 2 P. M. April 17 for 10,000 square yards pavement of five-inch concrete foundation, 6400 linear feet curb and gutter, 1000 cubic yards grading, 1000 linear feet culvert pipe, 10 catch-basins, 230 linear feet radius corners, 500 linear feet headers (stone or wood) and 2000 pounds cast iron; also on following materials: Brick block paving, sand filled; brick block paving, asphalt filled; creosoted wood block paving, sheet asphalt paving and bitulithic; certified check \$700; plans and specifications on file with City Clerk, C. R. Gordon, and with City Engineer, L. R. Parmelee; bidding blanks ready.

Paving.—Bids invited on 1100 feet concrete curbing and 500 square yards concrete sidewalk in Maplehurst Park, West Hill Ave. Address A. F. Sanford, Journal and Tribune office, Knoxville, Tenn.

Paving.—Proposals, on blank forms furnished by city, addressed to Mayor and Board of Aldermen, Bainbridge, Ga., received until 7.30 P. M. April 15 for furnishing material, equipment and labor for 22,000 square yards street paving (vitrified brick, wood block, bitulithic, granatoid and asphalt considered), with necessary drainage and granite curb as specified; certified check \$2500; usual rights reserved; plans and specifications at office of H. S. Jaudon Engineering Co., Atlanta, Ga., and Savannah, Ga., or specifications obtained by writing engineer at Box 582, Savannah, Ga.; J. W. Callahan, Mayor.

Paving.—Mayor and City Council, Brunswick, Ga., receive bids until April 15 for grading and paving with vitrified brick Monk, Gloucester, F and Oglethorpe Sts.; 11,000 square yards paving and 1500 linear feet granite curb; plans and specifications on file with J. L. Zachry, City Engineer and director of Public Works; copies furnished on application; certified check 10 per cent. of bid.

Paving.—Sealed proposals for paving certain streets in western section, Lynchburg, Va., received by Council Committee on Streets and Sewers at City Engineer's office until noon April 13, then publicly opened and read; all bids upon blank forms obtained at office of engineer; surety bond and certified check required; 30,000 cubic yards excavating, 21,000 linear feet concrete curb, 37,000 square yards bituminous macadam pavement; specifications and proposal forms, etc., obtainable at office of R. L. Shaner, City Engineer; rights reserved.

Paving.—Bids received until 8 P. M. April 22 for construction of about 65,000 square yards of water-bound macadam and 4000 square yards of asphalt macadam street paving in Sweetwater, Texas; each bidder must submit price per square yard of water-bound macadam, price per square yard of asphalt macadam paving, and price per cubic yard of grading; all bids in accordance with requirements of specifications of City Engineer, A. O. Dreyer, and obtained from him; certified check in sum of \$500, payable to Mayor; all bids shall be sealed, signed by bidder and mailed to L. S. Polk, City Secretary.

Paving.—Town trustees, Jackson, Ky., receives bids until April 20 for 13,000 square yards street paving with macadam or telford; plans, specifications and general information may be obtained from W. S. Canning, City Engineer, upon deposit of \$3.

Pipe, etc.—Eagle Lake Water & Light Co., Box 291, Eagle Lake, Tex., wants water mains and supplies for extension of mains; also plumbing supplies.

Piping.—See "Well-drilling Equipment."

Piping.—Woodmen Springs Co. (O. P. McPherson, Gloster, Miss., to be addressed) wants prices on piping.

Plumbing.—See "Electric Plant, etc."

Printing Machinery.—G. David Ricaurte, Pasto, Narino, Colombia, S. A., wants catalogues and prices on printing presses, type, paper, ink, pressboard, rollers, etc.; complete equipment for printing house; view to representation on commission or other basis.

Pump.—Harris Granite Quarries Co., Salisbury, N. C., wants second-hand pulsometer or Emerson pump with five-inch discharge.

Pumps.—City of Houston, Tex., wants prices on two pumps. Address City Secretary.

Pumping Plant.—U. S. Engineer Office, Federal Bldg., C. McD. Townsend, Colonel, Engineers, Detroit, Mich. Proposals for pumping plant for new lock at St. Mary's Falls Canal, Sault Ste. Marie, received until 3 P. M. May 7, and then publicly opened; information on application; work consists in furnishing, constructing and erecting plant, including three 30-inch pumps, one 10-inch pump, three large motors, one smaller motor and three transformers, together with all necessary pipes, shafting,

supports, switches, etc., and furnishing all necessary labor, plant and supplies required for completion and satisfactory operation as given in printed specifications; specifications and information sent upon request. Drawings may be seen at United States engineer offices at Detroit and Sault Ste. Marie, or a set may be ordered from Multi-Color Copying Co., Detroit, at cost of \$1.00.

Rails.—Atlantic & Western Railroad, Sanford, N. C., wants 26 miles good condition 56-pound relaying steel rails; open hearth preferred; with splice bars to match weighed in; delivery at Norfolk, Va.; quote definitely at once.

Rails.—Baskett Lumber & Manufacturing Co., Lee Baskett, president, Henderson, Ky., wants prices on 500 tons or more of 56 or 60-pound relaying rails.

Railway Construction, etc.—Meridian & Memphis Railway Co., Meridian, Miss., ready to receive bids to construct 30 miles roadbed; Meridian to Union, Miss.; plans and specifications at office, Meridian; work to begin on or before May 1; also wants 30 miles 6-pound relay rails.

Recorders (Vehicle).—See "Taximeters."

Refrigerators.—J. R. Ellis, 305 N. McNeill St., Memphis, Tenn., wants prices on refrigerators.

Reservoir Construction.—Water and gas committee, D. Kugelmann, chairman, Pensacola, Fla., receives bids at office of Water Department, City Hall, until noon April 16 to construct reinforced concrete reservoir; certified check \$500; blank proposal forms and copies of plans, specifications, etc., may be obtained from Water Department in City Hall.

Rice-milling Machinery.—Southwestern Rice Co., 407 Hill St., Houston, Tex., invites proposals on equipment, including transmission machinery. (Has placed order for power plants of gasoline engines.)

Road Construction.—Wilcox County Commissioners, Camden, Ala., receive bids until 2 P. M. April 30 to grade, drain and surface with gravel or sandstone four miles of road; cost \$8000; certified check \$400; W. S. Keller, State Highway Engineer.

Road Roller.—Meem & Kinnier, Lynchburg, Va., want to lease 10 or 12-ton road roller, with option of purchase.

Road Rollers, etc.—E. F. Lawrence, chairman street committee, East Radford, Va., will receive sealed prices until 6 P. M. April 5 on 10-ton steam and gasoline road rollers, sprinkler, 50-yard capacity rock crusher, with suitable revolving screen, for three sizes of stone, prices of elevators per linear foot; 10 to 20-horse-power traction engine; give prices on both new and second-hand machinery, with full description.

Road Roller.—Southern Machinery & Equipment Co., 1 National Exchange Bank Bldg., Lynchburg, Va., wants second-hand five-ton steam road roller; state full details.

Roofing.—Woodmen Springs Co. (O. P. McPherson, Gloster, Miss., to be addressed) wants prices on roofing.

School Plans.—Rev. A. E. Brown, superintendent Mountain Missions and Schools of Southern Baptist Convention, Asheville, N. C., wants books of plans for school buildings.

Seating.—Methodist congregation, Rev. John L. Franklin, pastor, Lincoln, Ga., wants prices on church pews.

Sewer Construction.—Office of Sewerage Commission, Baltimore, Md. Sealed proposals, addressed to Board of Awards, received at office of City Register, City Hall until 11 A. M. April 10 for building storm-water drains, contract No. 20, as per plans on file in office of Calvin W. Hendrick, chief engineer of Sewerage Commission; specifications and plans obtained upon application at office of commission, Room 904 American Bldg.; charge of \$5 for each specification with blueprints; refunded upon return of unused specifications and plans; certified check \$1000; approximate quantities, 20 linear feet 30-inch masonry drains; 5025 linear feet 24-inch to 15-inch terra-cotta pipe drains; 1650 linear feet 15-inch and 12-inch inlet connections; 29 manholes; 58 inlets; also receives proposals until 11 A. M. April 17 for constructing sanitary lateral sewers in districts No. 18 and No. 40-B, plans on file in office of Mr. Hendrick; specifications and plans obtained upon application at office of Sewerage Commission, Room 904 American Bldg.; charges for each specification and blueprint, lateral sewers in district No. 18, sanitary contract No. 87, \$10, and lateral sewers in district No. 40-B, sanitary contract No. 88, \$10; charges refunded upon return of unused specifications and plans; bids for lateral sewers in district No. 18, sanitary contract No. 87, require \$4000 check; bids for lateral sew-

ers in district No. 40-B, sanitary contract No. 88, \$2500; approximate quantities for district No. 18, 36,750 linear feet vitrified-pipe sewer, 8 to 24 inches in diameter; 2250 linear feet 24-inch sewer, vitrified pipe, or brick and cement; 21,000 linear feet vitrified-pipe house connections; for district No. 40-B, 33,000 linear feet vitrified-pipe sewer, 8 to 12 inches in diameter; 20,000 linear feet vitrified-pipe house connections.

Shingles.—Methodist congregation, Rev. John L. Franklin, pastor, Lincoln, Ga., wants prices on metallic shingles.

Skins.—Herman Dullere, Saventhem, Belgium, wants prices on skins (dried or otherwise); view to agency on commission.

Steam-heating Equipment.—See "Electric Plant, etc."

Steel Cylinders, etc.—Proposals received at office of General Purchasing Officer, Isthmian Canal Commission, Washington, D. C., until 10.30 A. M. April 27 for furnishing materials for steel cylinders, rivets, steel reinforced bdrs, babbit metal, bolster truck springs, pipe wrenches, cable hangers, fire hose, heating boilers, hot-water service heaters, sanitary fixtures, cast-iron pipe and fittings, steel pipe and fittings, brass valves, cocks, lumber, untreated piles and artificial vermillion; blanks and general information relating to this circular (No. 698) obtained from this office or offices of the assistant purchasing agents, 21 State St., New York; 614 Whitney-Central Bldg., New Orleans, and 1086 North Point St., San Francisco; also from the U. S. Engineer offices in Seattle, Los Angeles, Baltimore, Philadelphia, Pittsburgh, Boston, Buffalo, Cleveland, Cincinnati, Chicago, St. Louis, Detroit, Milwaukee, St. Paul, Chattanooga, Louisville, Mobile and Galveston; Commercial Club, Kansas City; Chamber of Commerce, Quincy, and Commercial Club, Tacoma. F. C. Boggs, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

Steel Tank, etc.—Office Constructing Quartermaster, Fort Screven, Ga. Bids received until April 25 for construction of 150,000-gallon steel water tank with trestle complete.

Stone.—John S. A. Johnson, Virginia Polytechnic Institute, Blacksburg, Va., wants trimming stone (for voussoirs, belt courses, etc.) for alumni gate of dark blue limestone or dark red sandstone.

Store Fixtures.—E. O. Maness, 221 Main St., Argenta, Ark., wants prices on fixtures for dry goods and grocery store.

Store Fronts.—E. O. Maness, 221 Main St., Argenta, Ark., wants prices on plate-glass fronts.

Structural Steel.—See "Building Materials."

Tanks.—Woodmen Springs Co. (O. P. McPherson, Gloster, Miss., to be addressed) wants prices on tanks.

Taximeters.—George S. Maxwell, 619 19th St. N. W., Washington, D. C., wants addresses of manufacturers of taximeters for public vehicles; also of recorders for vehicles.

Telegraph and Telephone Supplies.—See "Electrical Machinery."

Tools.—Herman Dullere, Saventhem, Belgium, wants prices on tools for all trades; view to agency on commission.

Transmission Machinery.—See "Rice-milling Machinery."

Trucks.—Baskett Lumber & Manufacturing Co., Lee Baskett, president, Henderson, Ky., wants prices on several 40,000 pounds capacity trucks to build log cars.

Valves.—Proposals received at office of Chas. Wheeler, Jr., City Clerk, Muskogee, Okla., until 10 A. M. April 16 for following valves: 30-inch gate, 24-inch gate and two 20-inch gate, light pressure, hub ends; one 20-inch check and two 16-inch gate, light pressure, Fig. ends; two 20-inch double gate, high pressure, Fig. ends; 20-inch check gate, high pressure, Fig. ends; prices f. o. b. Muskogee; alternate prices asked for both straight opening and geared valves on 24-inch and 30-inch valves; certified check for \$300; further information obtainable at office of City Clerk or office of consulting engineer, Alexander Potter, 114 Liberty St., New York.

Ventilating Plants.—See "Heating System."

Water-works.—City Council, Muskogee, Okla., receives bids until April 9 for following: Mechanical equipment for water purification plant and 400-horse-power boiler; certified check 10 per cent. of bid; plans and specifications on file with City Engineer of Muskogee and Alexander Potter, consulting engineer, 114 Liberty St., New York; E. H. Fleming, Commissioner Water, Sewers and Lights.

Water-works Materials, etc.—Proposals received by Willard S. Levan, City Clerk, City Hall, Holdenville, Okla., until 10 A. M. April 13, and then opened, for furnishing f. o. b. cars at Water-works Spur (on C. R. I. & P. R. R., three miles from Holdenville) following for water-works extension, etc.: 15,000 linear feet 10-inch cast-iron pipe, class A, weight 57.1 pounds per linear foot; 20,000 pounds lead; engine generator set, consisting of three-phase 60-cycle 2300-volt 75 K. V. A. generator, direct connected to horizontal steam engine; switchboards and instruments complete; 45,000 linear feet No. 6 waterproof copper wire; 130 Northern cedar poles, 30 feet long, six-inch tops, with cross-arms, guys, braces, insulators, etc.; bronze fitted horizontal turbine pump, capacity 625 gallons per minute against total head of 112 feet, direct connected to 35-horse-power 3-phase 60-cycle 2300-volt motor, with auto-starter; 72-inch by 18-foot horizontal return-tubular boiler; complete specifications on file at office of clerk and obtainable from consulting engineers, Goodwin & Harper, 929 Scarritt Bldg., Kansas City, Mo.; certified check for not less than 5 per cent. amount of bid; rights reserved.

Well-drilling Equipment.—Boyce Oil

& Development Co., C. A. Sharp, secretary-treasurer, Boyce, Tex., wants prices on rotary and standard tools, etc., for well drilling; also wants prices on casing and pipe.

Weaving Equipment.—See "Carpet Machinery."

Wharf Improvements.—R. B. McBride, Captain and Quartermaster, U. S. Army, Fort Monroe, Va., receives bids until 10 A. M. April 10 for repairing main wharf; deposit \$5 to guarantee return of plans.

Windows.—Methodist congregation, Rev. John L. Franklin, pastor, Lincoln, Ga., wants prices on art glass windows.

Wire.—Herman Dulere, Savanthen, Belgium, wants prices on iron, steel and galvanized wire and brass wire; view to agency on commission.

Wire Fencing.—See "Electrical Machinery, Gasoline Engines, etc."

Woodworking Machinery.—United Supply Co., High Point, N. C., wants prices on endless bed glue jointer and revolving clamp.

Wood-boring Machinery.—Jefferson Powder Co., Birmingham, Ala., wants information, etc., from manufacturers of machines for boring holes in stumps.

logical Engineers, 331 Fourth Ave., Pittsburgh, Pa., included in this booklet, gives detailed information as to the value of this oil field. Mr. Clapp is a consulting geological engineer of international reputation, who devotes his time to investigations of oil, gas and coal lands. This report and other information as included in the booklet will be mailed to interested persons on request.

The Patten Electric Hoist.

The advantageous use of the electric hoist made by the Patten Manufacturing Co., Chattanooga, Tenn., is attested by the experience of W. C. Wellener, contracting bricklayer of Baltimore, who used the Patten electric hoist for operating a bricklayer's elevator for handling the bricks and mortar in the construction of the Emerson Hotel, Baltimore. This work lasted over four months, a sufficient period in which to give the electric hoist a good test. The Patten high-speed double platform hoist was advantageously used by the George A. Fuller Company of New York and Washington in the construction of the 16-story Gatins Hotel at Atlanta, Ga.

Free Site for a Canning Factory.

A site for the establishment of a large canning factory or a manufacturing plant is to be donated by the Fidelity Land Co., Ltd., owners of the Dalcour tract, 22 miles from New Orleans. J. Wilfred Galdry, 705 Gravier St., New Orleans, is treasurer of the company. The site is 40 minutes from Canal St. by motor rail. The trip can be easily made by automobiles and auto trucks. The owners will also have the use of the river front, as it is the intention of the company to build a wharf on the banks of the Mississippi River at Dalcour. It is believed that a canning factory is preferable for this site and would be more profitable than other kinds of industrial plants for the people accepting the offer on account of the trucking and fruit sections and the easy reach of the fish, oyster and shrimp supplies.

Scherzer Rolling-Lift Bridges.

Many notable foreign orders for bridges built by the Scherzer Rolling Lift Bridge Co., Monadnock Block, Chicago, have been received, some of which bridges have been completed and others are now under construction. They include bridges in Great Britain, Egypt, Argentina, India and other countries. Within the United States and Canada more than 150 of these bridges have been constructed or are now under construction. The more recent of these include a double-track bridge for the Central Railroad Co. of New Jersey, and double-track bridge for the New York & Long Branch Railroad Co.; bridges for the Southern Railway, Savannah, and the Atlantic Coast Line at Navassa, N. C.; bridges for the Aransas Harbor Terminal Railway, Texas; the Canadian Pacific Railway and Canadian Northern Railway. Recent orders for electric railway and highway bridges are numerous, including some long and wide structures. Movable spans of as much as 225 feet, with widths up to 70 feet, are included in the structures noted. These bridges were all designed by the Scherzer Rolling Lift Bridge Co.

TRADE LITERATURE

"Year Round Farming."

The Terrell Land & Development Co. of Terrell, in Southwest Florida, has printed an attractive booklet in two colors illustrating the wide range of crops raised in that section. This company was organized on the Isthmus of Panama, and its stockholders, all of whom are working for the United States Government on the canal, aim to have a home in a semi-tropical climate after leaving the canal.

Oregonia Bridge Co.'s Diary.

A pocket diary and calendar for 1912, somewhat different from the ordinary, has been issued by the Oregonia Bridge Co., Lebanon, O. This diary not only contains the customary tables to be found in such publications, but has several additional features, such as information concerning castings and rules for the calculation of pulley speeds, together with matters of interest to contractors. This company is engaged in highway and railway bridge work, structural work, coal tipples, piers, etc.

The Cement Gun.

The construction, method of operation, uses and advantages of the cement gun recently described in our Mechanical Columns are stated in a pamphlet published by the American Society of Engineering Contractors, 13 Park Row, New York. This pamphlet contains 30 pages of descriptive

matter, illustrations and discussions of the cement gun and shows a number of important pieces of work in which it was used. This pamphlet may be obtained on request to the Eastern Cement Gun Co., Du Pont Bldg., Wilmington, Del.

Are Valve Tappet Rock Drills.

The tappet drill has certain characteristic advantages which have won for it a strong place in rock-drill practice. The "Are Valve" tappet drill is an evolution from the earlier patterns of this type. Bulletin 4294 has been issued by the Ingersoll-Rand Co., 11 Broadway, New York, describing and illustrating this type of drills. In addition to a complete description of the valve and its operation, together with its advantages, the bulletin shows duplicate parts of the drill, also sectional views, and gives descriptive tables of sizes and capacities.

Terry Turbine Service.

"Terry Service" is the title of the attractive illustrated booklet just issued by the Terry Steam Turbine Co., 90 West St., New York, showing the wide range of uses of the Terry turbines now installed in various parts of the world. The plants in which prominent installations have been made of these turbines for driving electric generators, pumps, forced draft blowers, gas blowers, etc., are noted in the booklet. These installations form a striking evidence of the increasing use of small steam turbines in various industries. This booklet will be sent on request to the company at any of its offices.

Zelicker's Catalogue and Bulletins.

The Walter A. Zelicker Supply Co., St. Louis, Mo., in addition to its 850-page catalogue, issues monthly bulletins and special lists of equipment, including rails, locomotives, cars, contractors' supplies, iron, steel and other metals, machinery, piling, bridges, tanks, etc., for sale by the company. In bulletin No. 139 the company states that it has listed offerings to the value of over \$2,000,000. The company buys and sells materials located throughout the United States, Canada and Mexico. Its central location enables it to be in close touch with all points. The catalogue and bulletins will be sent on request from prospective purchasers.

Barrett's Tarvia and Paving Pitch.

The advantages of Barrett's paving pitch for filling the joints of brick, granite or wood-block pavements, together with a description and brief history of the Tarvia products of the Barrett Manufacturing Co., 17 Battery Pl., New York, are included in the pamphlet entitled "Tarvia," issued by the company. Many illustrations of the highways, boulevards and streets paved with Tarvia as a binding material are shown. The three forms of Tarvia, Tarvia-A, Tarvia-B and Tarvia-X, are described and their applications stated. Full information on Tarvia materials will be sent on request to the Barrett Manufacturing Co., with offices in the principal cities.

Cooper Car Heaters.

The growth and development of car heating and the present status and efficiency of car heaters are described in a pamphlet recently issued by the Cooper Heater Co., Carlisle, Pa., manufacturer of heaters for city and interurban cars. The details of the construction of the Cooper pressed steel heater are shown for hot-water heating, using a gasproof coal magazine which will automatically feed the heater for 12 hours with one filling. The Cooper forced ventilation hot-air car heater is described in another pamphlet. These pamphlets show the progress made in these two forms of car heating in the past five years, and a statement is made of their efficiency as compared with other forms of car heating.

Lamp Efficiency.

A Bulletin of Engineering Research, No. 101, entitled "Lamp Efficiency," and issued February 1 by the engineering department of the National Electric Lamp Association of Cleveland, discusses the factors involved in the operation of incandescent lamps for a minimum cost of light. An analysis of the cost of light, factors controlling the cost of light (cost of energy and cost of lamps), the determination of the operating conditions under which a given type and size of lamps will produce light most economically and the approximate method of computing the best efficiency are given detailed treatment. The subject is taken up in an analytical method and illustrated by curves showing lamp performance. This bulletin, the first number of a series of bulletins on engineering research which will be devoted to scientific discussion of various problems bearing

INDUSTRIAL NEWS OF INTEREST

Lisle-Dunning Construction Co.'s Contracts.

A branch office has been established at Houston, Tex., by the Lisle-Dunning Construction Co. of Oklahoma City, Okla. The company has been awarded the following extensive contracts: That for the Oklahoma Central Depot, Chickasha, Okla., \$45,000; Miami High School, Miami, Okla., \$65,000; Oklahoma Hardware Co., Oklahoma City, \$55,000.

Salesman Wants Additional Line.

A salesman now traveling in the Middle West advertises in our Classified Opportunities Columns that he wants to sell a good factory line of products in addition to his line of enamel-ware. He calls twice a year on hardware and department stores in cities of all sizes. He represents one of the largest enamel-ware manufacturers at present, and has spare time to handle a good line of manufactures.

Contracts for Pedestal Concrete Piles.

Among the contracts recently secured by the MacArthur Concrete Pile & Foundation Co., 11 Pine St., New York, is one for driving 600 pedestal concrete piles for foundations for the Penn St. bridge, Reading, Pa. I. H. Focht & Sons are the general contractors. Another contract is for the Standard Oil Co. for 700 pedestal concrete piles for foundations under boiler plants, tanks, stills, and machinery at the Eagle Works of the Standard Oil Co. at Clarendon, N. J. This is the second contract from the Standard Oil Co. for pedestal piles.

Year's Output of Granite.

A representative of the Harris Granite Quarries Co., Salisbury, N. C., recently returned from a three-week's trip to Cleveland, Chicago, Detroit and other Western cities, and reports having met with exceptional success in making sales. It is reported that he sold the entire year's output of granite paving blocks of the quarry, besides taking orders for a considerable amount of granite for building purposes. This is the best trip he has ever had since his connection with the Harris company, and he states that the company will double its force at the quarries at once.

W. P. Callahan Company.

At a recent meeting of the directors of the W. P. Callahan Company J. DelF. Richards was elected president in the place of Thomas De Armon, retired. Mr. Richards is well known in financial circles, being the cashier of the Omaha (Neb.) National Bank. R. J. Connelly was elected vice-president, and E. R. Pickering, who was secretary and treasurer, was, in addition, made general manager. Mr. Pickering has been with the company for 30 years. This company manufactures machinery for cottonseed and linseed oil mills and also makes a line of gas and gasoline engines.

Large Shipment of Bridge Material.

The largest shipment of bridge material ever made from Roanoke, Va., has recently been made by the Virginia Bridge & Iron Co. of that city, consisting of 113 carloads of steel bridge girders and material for the Savannah River Bridge on the Seaboard Air Line Railway, near Savannah, Ga. Forty-

five cars of this shipment were sent out on the Virginian Railway and the remaining 68 cars in special trains over the Norfolk & Western Railway. The company also recently shipped 20 cars containing a part of the material for the 14-story office building at Jacksonville, Fla., for the Heard National Bank.

Ruggles-Coles Clay Dryers.

An interesting test, which was recently made at the Catskill Cement Co.'s plant, Cementon, N. Y., on a Ruggles-Coles A-14 dryer used to dry clay, resulted in an efficiency record of 82.51 per cent., which is considered remarkably good. This dryer is of a double shell type, the hot gases passing down the inner tube and then back between the tubes and through the advancing clay. The average moisture in the wet clay was 30 per cent., while the average moisture in the dried clay was 2.3 per cent. This remaining moisture was eliminated by storing the material, the remaining heat driving out the moisture.

Trustee's Sale of Coal Property.

The sale by the trustee of a valuable coal mine equipped with compressed air, etc., located on the Illinois Central Railroad, near Mercer and Central City, Ky., is noted in our advertising columns to take place April 18, 1912. The mine has a present rated capacity of 500 tons per day. There are 480 acres in fee simple, carrying coal measures and ample timber supply and an additional 140 acres in coal rights, all in one body, and 38 miners' houses. The mine and all property is to be sold at public auction on the premises. Interested parties may address W. L. Gordon, Jr., trustee, at Central City, Ky.

The Tri-Towns Board of Trade.

Dr. Charles E. Dellinger of Westernport, Md., writes the Manufacturers Record that a Board of Trade has been organized by the towns of Piedmont, W. Va.; Luke, Md., and Westernport, Md. These towns are all connected by bridges over the Potomac River and are known as the Tri-Towns. This Board of Trade will foster the interests of the Tri-Towns and will further their industrial elements with a view of increasing their development as much as possible. The location of these towns in the George's Creek coal district and as the center of a large fruit-growing section, together with other advantages, will give this Board of Trade a basis for effective work.

The Franklin Oil & Fuel Co.

Robert E. Heater, treasurer of the Franklin Oil & Fuel Co., with general offices in the Colorado Bldg., Washington, has just returned to Washington after viewing with a number of capitalists the oil wells and natural-gas producers which the company is developing in the Caddo oil fields of Louisiana. A booklet published by the Franklin Oil & Fuel Co. gives an interesting statement relating to the company and its holdings. The present properties consist of leaseholds and acreage of more than 7750 acres in Franklin county, Tennessee, and Caddo parish, Louisiana. Its holdings in the Caddo field are situated in the gusher district. The Tennessee field has not yet been fully developed, but the comprehensive report of a scientific geological investigation made by Frederick G. Clapp of the Bureau of Associated Geo-

upon the manufacture and use of incandescent lamps, will be of interest to the central station man and anyone interested in the economic production of light by means of incandescent lamps. Copies may be had by addressing the engineering department mentioned.

"Diamond N" Products.

The pipe and boiler coverings and kindred products manufactured by the Norristown Magnesite & Asbestos Co., Norristown, Pa., are described and illustrated in the catalogue and price list issued by the company. The different sections of coverings shown include "Diamond N," asbestos magnesite moulded covering for steam pipes and all high-pressure work, for pipes exposed to the weather, Vlm covering for low-pressure steam and hot-water heating pipes, asbestos air cell covering, felt covering, frost-proof covering, etc. It is stated that the company stands ready to help contractors in making estimates and may often suggest plans by which the most economical estimates may be made. Asbestos packing, tape, gaskets, mill board, asbestos paper, furnace and boiler cement, etc., are also manufactured by this company.

The Care of Chains.

Chains are sometimes discarded as of no more use when they could have been made to give much longer service had a knowledge of how to prolong their life been applied. With the purpose of instructing chain users in obtaining the most service from their chains, the Jones & Laughlin Steel Co., Pittsburgh, has issued for distribution a pamphlet on the care of chains. A method of annealing without sending chains to the shop is given. This eliminates crystallization and restores the cohesive properties of the metal in the chains. The testing of J. & L. chains is described and other advantageous features of these chains are stated. Catalogue "C," issued by the company, also contains these suggestions on the care of chains, as well as much additional information about chains of all kinds as manufactured by the company.

"Brownhoist" Tramrail System.

The electric monorail man trolleys, lumber trolleys, equalizing trolleys, overhead tracks, cranes, electric hoists, etc., manufactured by the Brown Hoisting Machinery Co., Cleveland, O., are described and illustrated in Catalogue D, recently issued by the company. The overhead or tramrail system of handling all kinds of material is being installed in many industrial and railroad plants, because it has proven that a saving can be made in this system in both large and small installations. This company has been building these systems for 31 years, and is in a position to quote on complete tramway equipments. The information contained in this catalogue should prove of much practical value to persons contemplating installations of labor and time saving handling outfits.

Metal Roofing and Siding Material.

Modern progress demands economical building materials that will give the maximum of protection and at the same time conserve the desirable features of ordinary buildings. This demand has led to the introduction of metal roofing and siding materials. The many forms of construction to which this material may be applied are illustrated in a booklet of information just issued by the American Sheet & Tin Plate Co., Pittsburgh, Pa. This booklet is entitled "Better Buildings," and the company believes that as soon as the wide-awake builder discovers the possibilities of the materials described he will at once find applications adapted to his own requirements even more varied than are shown in the booklet. This company manufactures the "Apollo" and "American" brands of corrugated and formed sheets.

Bogart Internal Combustion Engines

Bogart horizontal internal combustion engines for gas, gasoline, oil or producer gas are designed to meet the demands for a quiet, smooth-running and reliable engine operating at moderate speed. Special attention has been given to make the design neat and compact, and the parts have been reduced to the smallest number and simplest form, giving consideration to their durability and accessibility. The Bogart Gas Power Engineering Co., Buffalo, N. Y., has issued a catalogue describing the various types of this engine, together with illustrations and a statement of their advantages. In addition to this catalogue bulletins are issued which give complete details of construction of each type of machine. The catalogue and bulletins will be sent to interested persons on request.

A. Gilbert & Sons' Bulletin.

The standard stock sheet showing the complete list of bushings, round and hexagonal stick castings, made of Gilbert phosphor-bronze, Velox phosphor-bronze and machinery red brass, is published by A. Gilbert & Sons Brass Foundry Co., St. Louis, as Bulletin B-1. Stock sizes of bushings in these materials are cast in the rough. Sizes not indicated are made to order. A table of weights for different dimensions is included. Gilbert phosphor-bronze is a special high-tension alloy for severe hydraulic pressure service, for exceptionally high-speed bearings, gears, worms, pinions, etc.; Velox phosphor-bronze is for heavy bearings exclusively, and machinery red brass is for all ordinary purposes.

Kreischer Brick Products.

People interested in brick products are invited to examine the illustrated catalogue published by the Kreischer Brick Manufacturing Co. of 119 E. 23d St., New York. This company presents its catalogue with the following introduction: "In presenting this catalogue to the trade we have confined ourselves chiefly to showing the shades and shapes of front and fire brick manufactured by us, so that the users of material of this description may get a better idea of its possibilities. Our front brick are made by what is known as the stiff-mud process, and the material produced thereby being of a highly impervious nature, it is for all practical and ornamental purposes unsurpassed, besides being the most durable in the market at the present time. Fire brick, clay retorts, settings and special shapes having been manufactured by us since the year 1845, are known all over the world for their genuine good qualities. In order to meet the requirements of our customers we will undertake to make up anything in our line which might not be shown in this catalogue, and will also cheerfully impart any information which we have gained by practical experience."

The "Acme" (Nestable) Culverts.

A large and attractive folder, Form 26, showing the various forms and uses of "Acme" (nestable) corrugated No-Co-Ro metal culverts, has recently been issued for distribution by the Canton Culvert Co., Canton, O. This folder is interesting for the information which it contains, especially for those connected in any way with the development of highways, railroads or other construction in which drainage problems are found. An important feature of this form of construction is the convenience in nesting the parts of the culvert so that freighting and hauling expenses are reduced, owing to the small space occupied. The assembling at the point of construction is simple, no other tools than a hammer and wrench being required, and the work does not require skilled labor. The necessary bolts accompany the parts of the culvert. These culverts are also adaptable to bridge arches, flumes, etc., and are furnished in standard sizes from 8 inches to 72 inches in diameter. It is stated that "Acme" culverts made of No-Co-Ro metal are guaranteed to resist the effects of corrosion and to give satisfactory service for at least 25 years when properly installed. This folder will be sent to interested persons on request.

Rust-Resisting Sheet Metal.

The Harry Bros. Company of Newport, Ky., and New Orleans, is distributing a new pamphlet containing data and illustrations of its rust-resisting sheet metal. This product is referred to by the company as follows: "Genuine Open Hearth Iron" meets every demand for a sheet metal for culvert purposes, and can be accepted by the trade without question as to its rust-resisting and lasting qualities. In the past 50 years, as manufacturers of sheets, both black and galvanized, we have produced puddled iron, charcoal iron, semi-steel, Bessemer and open-hearth steel, and in the lines of progression open-hearth furnaces were erected by our company to enable us to produce 'Genuine Open Hearth Iron,' a special product which in rust-resisting and lasting qualities is superior to any product we have ever manufactured heretofore. This compares favorably in purity, in fact, it is guaranteed to contain less impurities than any of the old-fashioned irons. It is worked slowly through the manufacturing process, the time of manufacturing being nearly twice as long as ordinary steel, and being rolled much slower through the various rolling processes, does not strain or torture the metal, but makes it more dense and homogeneous, hence increasing its durability and rust-resisting qualities. It contains approximately less than 1-10 of 1 per cent, or only .035 to .10 per cent of these impurities, namely, carbon, manganese, sul-

phur, phosphorus and silicon, which impurities are dangerous rust and corrosion agents (see U. S. Department of Agriculture Bulletin No. 239 and other reports)."

OBITUARY.

James Jones.

James Jones, the founder of the Jones interests and chairman of the board of directors of the Pittsburgh-Buffalo Company, died suddenly on March 17 at the age of 76. His life and success demonstrate what can be accomplished through energy and perseverance, coupled with indomitable persistence. He was one of the pioneer coal operators in the Pittsburgh district, and toiled with his hands and his brain, taking from old Mother Earth the treasures she so reluctantly released. His was a forcible character, whose industry, tireless energy and determination to accomplish something filled those near him with a zeal to do things, no matter how great the obstacles nor how difficult the task. Mr. Jones was a native of Wales. He landed in New York in 1858 and proceeded to Cumberland, Md., but finding no work there went to Frostburg. His employment there proving unsatisfactory, he went to Mt. Savage, where he remained a short time, and continued to Pittsburgh, where he secured employment as a blacksmith. Later finding a more promising position near Elizabeth, Pa., he received his first introduction to the mysteries of mining in the Pittsburgh district, afterward accepting a position at a mine on the South Side, Pittsburgh, where he continued until the Civil War broke out, when he served in the army until 1865. In 1878 Mr. Jones leased the Osceola mines from Thomas Mellon, founder of the Mellon National Bank, and formed the Osceola Coal Co. Later, disposing of his property at a profit, he associated himself with the late W. L. Scott, Congressman and coal merchant of Erie, and leased through Judge Mellon the Grant Mines at Carnegie, which interests he afterwards sold to his partner, and in 1882 purchased a tract of land near Monongahela

City and operated the Ivill Mine. Going into the pit in the early hours of the morning, he worked until late at night, sometimes in water to the knees; at other times in a drenching rain he pumped the water from his sinking coal boats. Many times during the inclement season, wet and half frozen, he solicitously guarded his fleet lest it might be swept away by the strong flood. With dauntless will he worked long and hard, determined to achieve success in the line which he had marked out. In 1889 Mr. Jones purchased a half interest in the Catsburg Mine at Monongahela City and formed the Catsburg Coal Co., Ltd., and a year later purchased a half interest in the Rostravor Mine and organized the Rostravor Coal Co. In 1896, wishing to associate his five sons together in business, the firm of James Jones & Sons was formed, and with the river business, steamers, retail yards, etc., which had already become the property of John H. Jones, the local river business, flats and steamers of the T. M. Jenkins Company were bought, making the "Jon-s interests" one of the largest shippers of coal by river in the Pittsburgh district. The formation of the Monongahela River Coal & Coke Co. in 1899 brought an offer which James Jones and his sons accepted and sold their large holdings. When the Pittsburgh-Buffalo Company was organized he was persuaded by his sons to remain at the head of the company as chairman of the board of directors, and, while leaving the active conduct of affairs to them, kept in touch with the company's activities. There was one qualification of which he was proud and which was distinctive of the great business institution of which he was chairman. That was integrity. In every business transaction Mr. Jones was absolutely honest. His character stood untarnished by selfish ambition or avarice. His career was typical of the successful pioneer who blazed the way for the greatness of this industrial empire, and the splendid business organization which he developed is today one of the strongest and most substantial institutions of its kind in the country.

MOTOR VEHICLES AND TRACTORS.

Changes in Gramm Motor Truck Co.

It is announced in press dispatches that John M. Willys of Toledo, O., president and owner of the Willys-Overland plants and allied interests, has bought the controlling interest in the Gramm Motor Truck Co., Lima, O. This is considered one of the important motor truck deals of the year. The purchase price was not given out, but it is reported to have been one of the largest transactions in the recent history of the automobile business.

Little Rock Motor Fire Engines.

The Little Rock Board of Public Affairs has under consideration the purchase of three additional motor fire engines, together with the necessary equipment to further increase the efficiency of its fire department. The Council appropriated \$40,000 for the department. The new aerial truck has already

taken over the properties formerly held by the Commercial Car Co. at South Houston, and is adding to the machinery for automobile making purposes. It is expected to soon have the cars on the market.

To Make Motor Fire Wagons.

Announcement has been made by W. J. Head, vice-president and general manager of the Olds Motor Works, Lansing, Mich., that the company will add fire-fighting and other equipment for municipal service to its line of motor vehicles. The Oldsmobile chassis has for several seasons past been used for this work, and for three years this company has carried on extensive experiments with fire-fighting apparatus.

Village Fire Protection Equipment.

An effective fire-protection equipment for the village of Navesink, N. J., consists of a No. 3 rotary pump, made by the Goulds Man-



GOULDS PUMPS FOR MOTOR FIRE TRUCKS.

been received. It was manufactured by the American-La France Fire Engine Co., Elmira, N. Y. It is equipped with a 75-foot extension ladder and cost \$5225.

Automobiles and Motor Trucks Built in Houston.

The Twyford Automobile Manufacturing Co. has been incorporated with an authorized capital stock of \$400,000 to manufacture motor trucks and automobiles in Houston, Tex. These vehicles will be built under the Twyford patents, the distinctive principles of which lie in the four-wheel drive and the oscillating front axle. The company has

manufactured Co., Seneca Falls, N. Y., mounted in a 50-horse-power Thomas car. This equipment was built by the Red Bank (N. J.) Garage Co. and is shown in the illustration.

Regarding Gasoline Automobiles.

The comprehensive illustrated handbook giving description of motor-cars has been issued by the Automobile Board of Trade, 7 E. 42d St., New York. It is the ninth annual handbook of gasoline automobiles, prepared for the information of those interested in the manufacture and use of gasoline-driven vehicles. The present volume is the largest yet issued, containing 297 pages.

with illustrations of cars made by the leading manufacturers. More than 500 different models are included with specifications and prices of each. Copies of this handbook may be obtained by writing the Automobile Board of Trade and enclosing 10 cents. to cover postage.

Motor Truck Demand in South.

A traveling representative of the Alco truck, manufactured by the American Locomotive Co., 1886 Broadway, New York, has just completed a trip of 1100 miles through the West and Southwest, and states that business men there realize that horses work to a disadvantage as compared with motor trucks, so that they are in a receptive attitude toward the introduction of this means of transportation. He remarks in this connection that one of the most significant points in the motor-truck industry is the development of the demand for trucks in the South, and particularly in the State of Texas, where the most progressive motor-car dealers are establishing agencies, and business men in other lines so situated that they can handle motor trucks are also adding them to their sales departments.

The Christie Front-Drive Tractor.

The general construction and the advantages claimed for the front-drive tractor as manufactured by the Front-Drive Motor Co., Hoboken, N. J., are stated, together with illustrations, in a pamphlet recently issued by the company. This front-drive consists of two wheels and the power and steering mechanism built in a compact manner. The design is unique in that the driving and steering are both accomplished through the tractor wheels. The power is supplied by a gasoline motor, and the tractor is so constructed as to be readily attached to fire engines, aerial trucks, or any other form of vehicles in which such traction is desired. C. J. Cross, 141 Broadway, New York, is the agent for the Christie front-drive tractor in Southern territory. This pamphlet will be sent to persons interested in fire-department developments or other hauling problems.

Enlargement of the Marathon Motor Works.

In the development of automobile manufacturing plants in the South, the Marathon Motor Works, Nashville, Tenn., has taken a leading part. In order to keep pace with the demands for its cars, the company is making considerable additions to its factory site, buildings and machinery. Its capital stock is \$1,000,000, of which \$660,000 has been paid in full. It has recently purchased a five-acre tract adjoining the original factory site. This provides for four additional factory buildings which were already constructed when the property was purchased. The company has under construction a \$25,000 office building, which is designed to be one of the handsomest modern fireproof buildings in the city. This plant is located adjacent to the tracks of all the railroads entering Nashville, so that the transportation facilities are excellent. The company is increasing the number of its employees and constantly adding to the daily output of its cars.

Storage Batteries for Electric Vehicles

A good indication of the increased demand for electric vehicles is shown by the number of new electric vehicle manufacturing companies which have been formed in addition to those companies which have already developed an extensive business in pleasure and commercial electricies. Another indication of the growth of this business is the increased interest taken by central power stations in installing facilities and giving advantageous prices for electric service in charging batteries for these vehicles. Many central stations have constructed garages for electric vehicles exclusively, in which they may be cared for and the batteries charged over night or at other times when the vehicles are not in use. In some cases batteries are maintained charged and ready for use, so that vehicles may not be delayed. The part which the Electric Storage Battery Co., Philadelphia, has taken in advancing the interest of central stations and in pushing the use of electricies is stated in a pamphlet just issued by the company, entitled "A Central Station Prophecy Fulfilled." The advantages of the various batteries made by this company are explained. They include "Exide," the "Hycap-Exide," the "Ironclad-Exide," the "Thin Plate" battery, the "Chloride Accumulator" and the "Tudor Accumulator" batteries. The various companies using these batteries in electric vehicles are noted in the pamphlet as follows: The Argo Electric Vehicle Co., Saginaw, Mich.; the Baker Motor Vehicle Co., Cleveland, O.; the Borland-Grannis Company, 2634

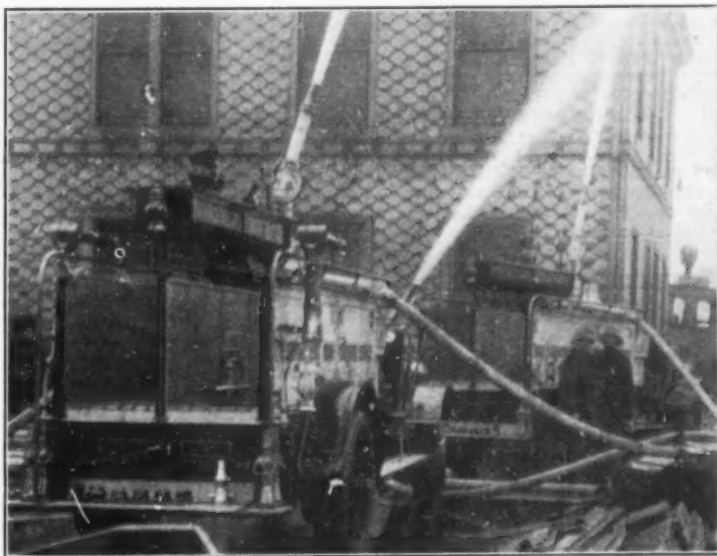
Michigan Ave., Chicago; the Broc Electric Vehicle Co., Cleveland, O.; the Columbia Motor Car Co., Hartford, Conn.; the Columbus Buggy Co., Columbus, O.; the Commercial Truck Co. of America, 27th and Brown Sts., Philadelphia; the Dayton Electric Car Co., Dayton, O.; the General Vehicle Co., Long Island City, N. Y.; the Grinnell Electric Car Co., Detroit, Mich.; the R. C. H. Corporation, Detroit, Mich.; the Kentucky Wagon Manufacturing Co., Louisville, Ky.; C. P. Kimball & Co., 1102 S. Michigan Ave., Chicago; the Ohio Electric Car Co., Toledo, O.; the Phipps Electric Auto Co., Detroit; the Rauch & Lang Carriage Co., Cleveland, O.; the Standard Electric Car Co., Jackson, Mich.; the Studebaker Automobile Co., South Bend, Ind.; the Walker Vehicle Co., 112 W. Adams St., Chicago; the Ward Motor Vehicle Co., Concord Ave. and E. 143d St., New York; the Waverly Company, Indianapolis, Ind., and the Wood Motor Vehicle Co., 2521 Calumet Ave., Chicago. The great development in hydro-electric plants in the South and Southwest, from which electric power is obtained in practically unlimited quantities and at economical rates, will have an important bearing on the use of electric vehicles in that part of the country.

La France Gasoline-Hydraulic Trucks

The Manly hydraulic transmission system has been adopted by the American-La France Fire Engine Co., Elmira, N. Y., in the construction of the La France gasoline-hydraulic truck. This system consists of an adaptation of the pump instead of gearing, the pump in turn driving oil through motors which are actuated by the circulation of the oil, these motors turning shafts from which sprocket chains transmit the power to the rear wheels. This construction eliminates the usual form of clutch, change-gear box, the drive shaft, the jack shaft, and the differential. The power delivered at the traction wheels is dependent upon the flow of oil through the motors, which are of the cylinder and piston type. This flow is varied

Mack Trucks for Fire Department.

The highly successful test of the utility and carrying capacity of the new motor fire trucks purchased by the city of Baltimore for its high-pressure service has resulted in orders for three trucks in addition to the two already in use. These Mack motor fire trucks are manufactured by the International Motor Co., 57th St. and Broadway, New York, which company also builds the Saurer and Hewitt trucks. The accompanying illustration shows the two Mack trucks under test with the recently completed high-pressure service of Baltimore. Each truck was specified to carry a load of 5000 pounds and to make 30 miles per hour. As a fact, they are loaded with 6800 pounds and carry a crew of 12 men and made 32 miles per hour, including turns at street corners. They have made 50 miles per hour under favorable conditions. They are fitted with 48-inch dual rear wheels and 36-inch single front wheels; 50-horse-power four-cylinder engines. Their fire-fighting equipment consists of 10 lines, or 2000 feet, of three-inch hose of highest quality, to withstand the great pressure put upon it by the high-pressure pumps; manifold hydrant having 10 outlets to which the hose is connected, two to each of five nozzles; one large searchlight to be directed into buildings when necessary; oil, gas and electric lights, so that a light will be assured under all conditions; extra nozzles in sockets, which may be seen in the illustration, and other equipment necessary for efficient fire fighting. In the test shown in the illustration the streams reached a vertical altitude of 160 feet. The three new motor trucks will be delivered early in April. Other sales of Mack and Saurer trucks made by the International Motor Co., Baltimore branch, include the following: To the Sharptown-Mardela Transit Co., Salisbury, Md., one 18-passenger, combination freight and passenger truck; American Tobacco Co., one 5-ton; American Transfer Co., three 1-ton; Fred Bauernschmidt, one 4-ton; Bernheimer Bros., one 1½-ton and six 1500-pound



MACK TRUCKS FOR FIRE DEPARTMENT.

by changing the length of stroke in the pump cylinders from zero to full capacity. The hydraulic drive is intended to afford a constant engine speed and utilization of the full power at whatever ratio may be necessary to obtain the desired speed. The La France truck is designed for especially heavy work. While normally rated at five tons, it is claimed that it will stand an overload of one ton. The deck of the truck is 14½ feet, the over-all length 18 feet 11 inches. The wheel base is 143 inches, with 66-inch tread forward and 68 inches in rear; maximum speed, 12 miles per hour. The first transmission of this character was installed in a two-ton wagon in 1907. This wagon has been used for demonstration purposes, and as yet no changes or repairs have been made in the transmission, although it has been driven more than 8000 miles under full load. The American-La France Fire Engine Co., which has for more than 35 years been a leading builder of fire apparatus in this country, is building these trucks under license from the Manly patents. The Hydraulic Truck Sales Co., 177 Broadway, New York, has been organized and incorporated to market these trucks. A pamphlet has been issued by the company fully describing and illustrating the operation of the Manly drive and construction of the five-ton truck. This pamphlet will be sent on request to the Hydraulic Truck Sales Co.

trucks; T. C. Bloom, one 3-ton; Chesapeake & Potomac Telephone Co., one 1½-ton; City Baking Co., one 1½-ton; Dunning's Express Co., one 2-ton; G.B.S. Brewing Co., one 4-ton; Geo. Gunther Brewing Co., four trucks; McMahon Bros., three 5-ton; Ruxton Heights Water Co., one 4-ton; the Texas Co., one 5-ton; J. F. Wiessner & Sons, four trucks; Ernst & Baker, Hagerstown, Md., one 2-ton; Hotel Emerson, one 4½-ton, and the Cumberland Brewing Co., one 4½-ton truck.

Literary Notes.

The American Government. By Frederic J. Haskin. Illustrated by B. N. Cline-dinst. Publisher, J. B. Lippincott Company, Philadelphia. Price \$1.

This book is an entertaining and instructive story of the work of the several departments of the Federal Government and of leading bureaus or branches of the departments. It does not undertake to give a complete history of the growth of the Government, but to describe the surroundings of the every-day activities of the agencies entrusted with the task of administering the affairs of 95,000,000 people at home and abroad. It is succinct

enough to serve as a textbook in the schools for the development of interest on the part of the rising generation in matters of civic life and comprehensive enough to occupy a convenient place in the library of everyone undertaking to be well informed about his country.

Patent and Trade-Mark Laws of the World. By B. Singer of Chicago, New York and Washington.

This is the third edition of a work which the author published first in 1903, giving in succinct shape the information about foreign patents and trade-marks, designs and copyrights. The second edition of 1907 was issued to meet changes in laws and practice, and this third edition, more comprehensive than the others, brings up to date the material which is taken almost exclusively from the statute-books and the adopted rules of practice of each country.

Steam-Power Plants; Their Design and Construction. By Henry C. Meyer, Jr., M.E. Published by the McGraw-Hill Book Co., New York and London. Third edition. Clothbound. Price \$2.

Information concerning the design, plans, installation and operation of steam-power plants is comprehensively presented in this book of 220 pages, extensively illustrated and containing line drawings of many power plants. Detailed drawings of boilers and machinery, including circulating and air pumps, condensers, feed pumps, feed-water heaters and economizers, turbines, mechanical draft equipment, piping layouts, chimneys, coal handling and water supply equipment, etc., are included. Frequently engineers and others in charge of manufacturing plants are called upon to plan and purchase steam-power plants without being able to obtain all the information desired ready at hand. This book should be of special value in such cases, as it is a practical compilation of information needed to supplement that of the practical engineer. Detailed specifications of boilers and engine plants are presented in such a way as to form a guide for purchasers and designers.

Hand Forging and Wrought Iron Ornamental Work. By Thomas F. Googerty. Published by Popular Mechanics Co., Chicago. Illustrated, clothbound. Price \$1.00.

This volume affords an interesting textbook to instructors in manual training, to students, to professional workers and others who may be interested in hand forging and ornamental iron work. By following the descriptions and illustrations the practical means of making artistic and useful articles, grilles, scroll work of various kinds, ornamental lamps, andirons and fire tools are taught, and at the same time valuable training is given and an intimate study of the qualities and possibilities of iron is afforded. While the book deals largely with interior iron work, it shows the constructive principles of hand forging in general, and points out the guiding principles and methods which underlie all forge work. An important feature lies in the number of designs and drawings shown, which were made by the author while teaching decorative iron work. Instructions for working out these designs have also been incorporated in the text. These should prove of additional value in stimulating original work and experimental designs.

Engineering as a Vocation. By Ernest McCullough, C.E. Published by the David Williams Company, 239 W. 39th street, New York. Cloth, 201 pages.

Information of value to everyone directly or indirectly interested in the subject of present-day engineering as a pro-

fession; statements of its advantages and disadvantages; opinions as to the bearing of preliminary educational preparation for engineering work and as to the practical work and experience which must be added to technical studies to produce results, are all presented in a non-technical and entertaining manner in this book, which is written from the impressions formed from the many years of both theoretical and practical work of the author. Parents contemplating directing the studies of sons toward the engineering profession will read it with appreciation; students considering what line of engineering to follow may read it with profit, and engineers may read it with retrospective and introspective thoughts.

In answer to the question, "What is the trouble with our engineering schools?" the author very properly says there is nothing seriously the matter, and the few points that may be open to criticism will be corrected in time. In reply to the specific question, "Which branch of engineering pays best?" the author advises that the choice may be pretty safely left to the boy, if he is bent upon being an engineer. As a basic proposition the author's opinion is that the general technical education and training of the civil engineer, with an additional year devoted to mechanical and electrical subjects, best fits a man for engineering work on account of the broadness of its branches.

To quote the author, he states that "upon leaving school the well-trained civil engineering graduate is competent to enter the office of any engineer and in any line of work as an assistant. He should be a fair mechanical and architectural draughtsman, and have a fair knowledge of prime movers. This, added to his knowledge of mathematical, physical and chemical sciences, the properties of materials, the designing of structures, etc., gives him a far better fighting chance than his brother student who specialized on smaller subjects. The education of a civil engineer is an excellent preparation for general business, for nearly all men are concerned more or less with construction enterprises in these days."

The Chamber of Commerce of Sumter, S. C., is circulating an attractive illustrated folder telling of the opportunities for the investor and homeseeker in that city and its vicinity.

The Young Men's Progressive League of Beeville, Tex., George M. Boyd, secretary, is planning a campaign of advertising involving the co-operation of holders of large tracts of land in the vicinity.

Alabama spent \$1,377,689 in 1911 upon the construction of roads, bridges and culverts.

Chief Mine Inspector C. H. Nesbitt of Alabama has made a report showing that that State produced 15,011,853 tons of coal in 1911, a decrease of 1,077,375 tons from the production of 1910.

FINANCIAL NEWS

The MANUFACTURERS RECORD invites information about Southern financial matters, items of news about new institutions, dividends declared, securities to be issued, openings for new banks, and general discussions of financial subjects bearing upon Southern matters.

Review of the Baltimore Market.

Office MANUFACTURERS RECORD,

Baltimore, Md., April 3.

In the Baltimore stock market during the past week there was a fair amount of business. The trading showed sales thus: United Railways common, 20 to 197½; do. income bonds, 64½ to 64¾; do. funding 5s, 87 to 87¾; do. notes, 5s, 100¼ to 100¾; United 4s, 85½ to 85¾; United

Electric Light & Power 4½s, 95¼; Consolidated Gas, Electric Light & Power common, 106 to 107; do. preferred, 110 to 114½; do. 4½s, 90¼ to 90; do. notes, 100; Consolidated Gas 4½s, 98¼; Seaboard Air Line common, 25 to 25½; do. preferred, 49 to 50½; Seaboard 4s, stamped, 87¾; Cotton Duck 5s, 76 to 76¾; G. B. S. Brewing 4s, 42¼ to 40½. Bank stock sold as follows: Bank of Baltimore, 165; Mechanics', 28; Merchants', 185; Union, 134.

Maryland Casualty sold at 97; Mercantile Trust, 152; Colonial Trust, 28; Maryland Trust common, 110; do. preferred, 118.

Other securities were traded in as follows: Atlantic Coast Line of Connecticut, 270 to 271; Atlantic Coast Line convertible debenture 4s, 103 to 103¼; do. consolidated 4s, 95; do. stock, 140; do. Connecticut 5-20s, 92½; Atlantic Coast Line preferred, 108; Baltimore Traction 5s, 107½; Charleston Consolidated Electric 5s, 96; Consolidation Coal, 105 to 103½, with last sale at 104¼; Baltimore City 4s, 1954, 100½; do. 5s, 1916, 103½; do. 4s, 1961, 101¼; do. 3½s, 1940, 91¼; do. do. 1930, 94½; Milwaukee Refining 4½s, 95; Baltimore Electric 5s, stamped, 98¾ to 98½; do. preferred, 45¾ to 46¼; Houston Oil preferred, trust certificates, 63¼ to 63¾; do. common, trust certificates, 10¼ to 10½; do. dividend certificates, 84 to 84¼; Maryland & Pennsylvania common, 35; Norfolk Railway & Light 5s, 100 to 100¼; do. common, 28; Richmond & Danville debenture 5s, 105¼; City & Suburban (Baltimore) 5s, 105; Alabama Consolidated Coal & Iron 5s, 83¾; Consolidation Coal refunding 5s, 93¾ to 93¾; Florida Southern 4s, 92¾; Milwaukee Gas 4s, 90; Washington, Baltimore & Annapolis 5s, 84¼ to 84½; Macon Railway & Light 5s, 101½; Norfolk & Atlantic Terminal 5s, 94¼; Northern Central Railway stock, 128½ to 129; Georgia & Alabama Consolidated 5s, 106¾ to 107; Virginia Railway & Power common, 47½; Anacostia & Potomac 5s, guaranteed, 102¾; Maryland Electric 5s, 99¾ to 99½; Carolina Central 4s, 93¼; Pennsylvania Water & Power common, 63; do. 5s, 91¾; International & Great Northern Corporation, 44 to 48; South Bound 5s, 108½; Coal & Coke 5s, 94¾; Augusta & Aiken common, 28; New Orleans, Mobile & Chicago 1st 5s, 92¾; Newport News & Old Point 5s, 98½; Anacostia & Potomac 5s, 101; Jamison Coal & Coke, George's Creek 5s, 93¾ to 94¼; Chattanooga Water-works 6s, 1931, 101.

SECURITIES AT BALTIMORE.

Last Quotations for the Week Ended April 3, 1912.

Railroad Stocks.	Par.	Bid.	Asked.
Atlantic Coast Line.....	100	139½	140½
Atlantic Coast of Conn.....	100	270	275
Maryland & Pennsylvania.....	100	34½	36½
Norfolk Railway & Light.....	25	28	30
United Ry. & Elec. Co.....	50	19½	20
Western Maryland.....	100	62½	65
Virginia R. & P. Com.....	100	49½	50

Bank Stocks.	Par.	Bid.	Asked.
Bank of Baltimore.....	100	160	166
Bank of Commerce.....	100	15	20
Citizens.....	100	42	45
Exchange.....	100	100	105
Farmers & Merchants.....	40	49	51
First National.....	100	123	125
German-American.....	100	107	107
German.....	100	110	110
Howard.....	100	14½	15
Maryland.....	20	25	25
Merchants.....	100	184	185
Marine.....	100	30	33
Mechanics.....	100	10	28
Union.....	100	123	134
Western.....	20	37½	38

Trust, Fidelity and Casualty Stocks.	Par.	Bid.	Asked.
Baltimore Trust.....	100	164	165
Fidelity & Deposit.....	50	150	151½
Maryland Trust.....	100	108½	110½
Maryland Trust Pfd.....	100	117½	117½
Maryland Casualty.....	25	96½	97
Mercantile Trust & Deposit.....	50	151	153

Miscellaneous Stocks.	Par.	Bid.	Asked.
Con. Gas, Elec. Lt. & P. Com.....	100	107	108
Con. Gas, Elec. Lt. & P. Pfd.....	100	114	115
Consolidation Coal.....	100	104	104½
G. B. S. Brewing Co.....	100	1¼	2½
Georgia Creek Coal.....	100	¾	¾
Mer. & Min. Trans. Co., V. T. L.....	100	60	72
Baltimore Electric Pfd.....	46	46½	46½

Railroad Bonds.	Par.	Bid.	Asked.
Atlantic Coast 1st 4s.....	100	95½	96¼
Atlantic Coast Conv. Deben. 4s.....	100	103	103½
At. Coast (Conn.) 4s, Cfs., 5-20s.....	92	92	92½
Atlantic Coast (Conn.) 5s, Cfs.....	104	105	105
Carolina Central 4s.....	100	93	93¾
Coal & Coke Railway 5s.....	100	94½	95
Coal & Iron Railway 5s.....	100	101½	102½
Col. & Green, 1st 6s.....	100	105	105
Florida Southern 4s.....	100	92¾	93
Georgia & Alabama 5s.....	100	76	78
Georgia & Florida 5s.....	100	106¾	106
Georgia, Car. & North, 1st 5s.....	100	107½	107¾
Georgia South. & Fla. 1st 5s.....	100	102½	102½
Macon, Dublin & Savannah 5s.....	100	92¾	92¾
Coal & Iron Railway 5s.....	100	115	116½
Raleigh & Gaston 5s.....	100	108	108
Richmond & Danville Deben. 5s.....	100	105½	105½
Seaboard 4s, Stamped.....	87¼	87¾	87¾
Seaboard Adjustment 5s.....	80	80¾	80¾

South Bound 5s.....	108½	108½
Southern Railway Con. 5s.....	107½	108
Suffolk & Carolina 5s.....	101	103¾
Virginia Midland 3d 6s.....	106	106
Wilmington & Weldon 5s.....	110	110¾
Washington-Vandemere 4½s.....	95½	95½

Street Railway Bonds.	Par.	Bid.	Asked.
Anacostia & Potomac 5s, Gtd.....	101	102½	104
Anacostia & Potomac 5s, Gtd.....	101	102½	104
Atlanta Con. Street Railway 5s.....	105	105	105
Baltimore, Sp. Pt. & C. 4½s.....	96½	96½	96½
Baltimore Traction 1st 5s.....	107	107	107
Central Railway (Balto.) Ext. 5s.....	107	107	107
Charleston Con. Electric 5s.....	96½	96½	96½
City & Suburban 5s (Balto.).....	105	105	105
City & Suburban 5s (Wash.).....	104½	105	105
Fairmont & Clarksburg Trac. 5s.....	101	101½	101½
Knoxville Traction 5s.....	107	107	107
Lexington Railway 1st 5s.....	93½	93½	93½
Macon Railway & Light 5s.....	101	101½	101½
Maryland Electric Railways 5s.....	93¼	94	94
Memphis Street Railway 5s.....	97	98½	98½
Metropolitan 5s (Wash.).....	107½	107½	107½
Newport News & Old Point 5s.....	98½	99	99
Norfolk & Portsmouth Trac. 5s.....	89½	89½	89½
Norfolk Railway & Light 5s.....	98½	100¾	100¾
Norfolk & Atlantic Ter. 5s.....	83½	85	85
United Railways 1st 4s.....	85½	85½	85½
United Railways Income 4s.....	64½	65	65
United Railways Funding 5s.....	87	87½	87½
United Railways Notes.....	100½	100½	100½
Virginia R. & P. 5s.....	95½	96½	96½

Miscellaneous Bonds.	Par.	Bid.	Asked.
Ala. Con. Coal & Iron 5s.....	83¾	83¾	83¾
Atlanta Gas 1st 5s.....	104½	105½	105½
Baltimore Brick 5s.....	84½	84½	84½
Baltimore Electric 5s, Stp.....	98¾	99	99
Consolidated Gas 4½s.....	109	109½	109½
Consolidated Gas 4½s.....	97¾	98	98
Con. Gas, Elec. Lt. & P. 4½s.....	90	90½	90½
Consolidation Coal Ref. 4½s.....	93¼	94	94
Consolidation Coal Ref. 5s.....	93¼	94	94
Fairmont Coal 1st 5s.....	96¾	97	97
G. B. S. Brewing 1st 4s.....	40½	40¾	40¾
G. B. S. Brewing Inc. 5s.....	5	8	8
Merchants & Miners' Equip. 5s.....	100	100½	100½
Mt. Vernon-Woodly's Cot. Duck 5s.....	76½	76½	76½
Roland Park E. & W. 5s.....	101½	101½	101½
United Elec. Lt. & P. 4½s.....	95	96	96

SOUTHERN COTTON-MILL STOCKS.

Quotations Furnished by William S. Glenn, Broker, Spartanburg, S. C., for Week Ending April 1.

Bid.	Asked.
Abbeville Cotton Mills (S. C.).....	75
Aiken Mfg. Co. (S. C.).....	75
American Spinning Co. (S. C.).....	182
Anderson Cotton Mills (S. C.).....	48
Anderson Cot. Mills (S. C.) Pfd.....	100
Arcadia Mills (S. C.).....	90
Arkwright Cotton Mills (S. C.).....	99
Belton Mills (S. C.).....	100
Brandon Mills (S. C.).....	90
Cherokee Mills (S. C.).....	60
Chlorine Mfg. Co. (S. C.) Pfd.....	97
Clinton Cotton Mills (S. C.).....	120
Courtney Mfg. Co. (S. C.).....	93
Dallas Mfg. Co. (Ala.).....	99
Darlington Mfg. Co. (S. C.).....	45
D. E. Converse Co. (S. C.).....	75
Drayton Mills (S. C.).....	90
Eagle & Phenix Mills (Ga.).....	106
Easton Cotton Mills (S. C.).....	125
Enoree Mfg. Co. (S. C.).....	25
Enoree Mfg. Co. (S. C.) Pfd.....	85
Gaffney Mfg. Co. (S. C.).....	55
Gainesville Cotton Mills (Ga.).....	72
Greenwood Cotton Mills (S. C.).....	130
Graniteville Mfg. Co. (S. C.).....	135
Greenwood Cotton Mills (S. C.).....	67
Grendel Mills (S. C.).....	90
Hartselle Cotton Mill (S. C.).....	160
Hartsville Mills (N. C.).....	160
Inman Mills (S. C.).....	100
King Mfg. Co., J. P. (Ga.).....	80
Lancaster Cotton Mills (S. C.).....	130
Lancaster Cot. Mills (S. C.) Pfd.....	97
Langley Mfg. Co. (S. C.).....	75
Laurens Mills (S. C.).....	125
Limestone Mills (S. C.).....	155
Lockhart Mills (S. C.).....	60
Lockhart Mills (S. C.) Pfd.....	90
Loray Cotton Mills (N. C.) Pfd.....	95
Marble Cotton Mills (S. C.).....	75
Mills Mfg. Co. (S. C.).....	90
Molokan Mfg. Co. (S. C.).....	95
Monaghan Mills (S. C.).....	105
Monarch Cotton Mills (S. C.).....	110
Newberry Cotton Mills (S. C.).....	125
Ninety-Six Cotton Mill (S. C.).....	130
Norris Cotton Mills (S. C.).....	115
Orr Cotton Mills (S. C.).....	90
Pacolet Mfg. Co. (S. C.).....	90
Pacolet Mfg. Co. (S. C.) Pfd.....	95
Parker Common.....	20
Parker Preferred.....	65
Pelzer Mfg. Co. (S. C.).....	130
Poe Mfg. Co., F. W. (S. C.).....	110
Saxon Mills (S. C.).....	115
Spartan Mills (S. C.).....	110
Trion Mfg. Co. (Ga.).....	130
Tucapau Mills (S. C.).....	300
Union-Buffalo (S. C.) 1st Pfd.....	15
Union-Buffalo (S. C.) 2d Pfd.....	15
Victor Mfg. Co. (S. C.).....	110
Warren Mfg. Co. (S. C.).....	80
Warren Mfg. Co. (S. C.) Pfd.....	100
Washington Mills (Va.).....	28
Washington Mills (Va.) Pfd.....	106
Whitney Mfg. Co. (S. C.).....	110
Wiscasset Mills (N. C.).....	135
Woodruff Cotton Mills (S. C.).....	95
Woodside Cotton Mills (S. C.).....	100
Watts Mills (S. C.).....	70
Williamston Mills (S. C.).....	115

Earnings of Railroads.

"The Earning Power of Railroads, 1912," written by Floyd W. Mundy of James H. Oliphant & Co., bankers and brokers, New York, has been issued. It is a volume of more than 500 pages, and it presents, in condensed and convenient form, the essential facts and statistics concerning 154 railroads in the United States, Canada and Mexico. Comparisons of earning power of different lines is thus made easily possible. This is the eleventh

year of the publication, that is issued from Moody's Magazine Book Department, 35 Nassau street, New York, which is the sales agent.

Stock Prices.

Frederic Drew Bond has written the sixth volume of "The Investors' Library," under the title "Stock Prices," with the sub-heading "Factors in Their Rise and Fall." As nearly everyone in business, or who possesses any capital, has his attention directed now and then to the stock market, it is safe to say that this little book tells a story of very general interest. It is well worth reading, and they are few who could not obtain enlightenment from its pages. Moody's Magazine Book Department, 35 Nassau street, New York, issues it.

FINANCIAL CORPORATIONS.

Ala., Birmingham.—The Interstate Securities Co. is reported to have filed articles of incorporation; capital \$5000; G. P. Foster, president; J. C. Jones, vice-president; T. E. Clarke, secretary and treasurer.

Ala., Comer.—The Bank of Comer has begun business; capital \$15,000. Officers: President, Dr. J. L. Houston; first and second vice-presidents, Dr. Judson Davis and J. A. Grant; cashier, J. T. Nelson.

Ala., Mobile.—The Mutual Alabama-Florida Agency Co., capital \$100,000, is reported incorporated by V. H. Marshall, Jr., V. H. Marshall, Sr., D. F. Marshall and W. H. Marshall.

Ark., Hot Springs.—The Weslow Co-operative Banking Co., capital \$100,000, is reported incorporated by M. Arnold Weslow, Julia D. White, J. B. Aiken, T. E. Baldwin, W. E. McKinney, T. J. Crook, Dan R. Crow, J. W. Bridges and Mary White Weslow.

Ark., Sheridan.—Official: Citizens' Bank chartered; capital \$20,000; G. W. Baker, president; J. B. Shaw, vice-president, and J. Thad Wilson, cashier. Business is to begin August 1.

D. C., Washington.—The Munsey National Bank, capital \$500,000, is reported chartered; incorporators, Frank A. Munsey, S. W. Woodward, James F. Oyster, William F. Gude, Perry Belmont, Gist Blair, Senator C. W. Watson, Edward B. McLean, Wilton J. Lambert, W. T. Dewart of New York; F. A. Walker, C. H. Pope of New York, R. Galois of Baltimore, Stuart Oliver of Baltimore, A. S. Worthington, William A. Hill, C. E. Nicol, John H. Nolan, W. H. White, W. W. Chiswell, Thomas C. Bradley, Clarence Moore, A. Lisner and Julius Garfinkle.

Ga., Cassville.—The Bank of Cassville is reported organized with directors thus: J. B. Crawford, J. C. McTier, Joseph Lipscomb, S. J. Gore, Irby Sheets, W. Ed. Pittard, David Weaver and Dr. G. W. Battle.

Ga., Ellenwood.—Official: The Bank of Ellenwood chartered; capital \$25,000; directors, A. M. Stewart, McDonough, Ga., president; G. T. Williamson, vice-president; I. H. McVickers, cashier; I. M. Burks, G. T. Williamson, N. P. Henderson, W. G. Calloway and F. White, all of Ellenwood. Business began March 18.

Ga., Junction City.—Official: The Farmers and Merchants' Bank will begin business April 3; capital \$25,000; directors, C. W. Moore, president; L. J. Downs, vice-president; S. F. Hart, second vice-president; R. L. McBryde of Geneva, Ga.; J. T. Hart, Howard, Ga.; Governor Posey, Juniper, Ga.; T. T. Ragland, Talbotton, Ga., and W. A. Baldwin, Junction City, Ga.

Ga., Rome.—The Home Fire Insurance Co. is reported to have made application for a charter. Incorporators: John Wesley Cooper, T. J. Denton, C. C. Scoggins, W. J. Nunnally and E. W. Best.

La., Donaldsonville.—The L. A. Colomb & Son, Ltd., is reported organized to conduct a general insurance agency. Directors: Alex. Bloomenstiel, president; J. N. Colomb, vice-president, and Dr. M. F. Bloomenstiel, secretary-treasurer.

La., Morgan City.—The People's State and Savings Bank, capital \$40,000, is reported organized with Albert M. Cotton, president; Leon Kahn, C. F. Thibodeaux, Dr. W. J. McClellan, Oscar Benor and Wilbur Kramer, vice-presidents.

La., New Orleans.—The Pan-American Life [For Additional Financial News, See Pages 92 and 93.]

Established 1835
The Merchants National Bank
 South and Water Sts., BALTIMORE, MD.
 DOUGLAS H. THOMAS, President.
 WM. INGLE, Vice-Pres. and Cashier.
 J. C. WANDS, Asst. Cashier.
 JOHN B. H. DUNN, Asst. Cashier.
 Capital \$1,500,000
 Surplus and Profits - - - \$900,000
 Deposits, \$12,000,000

Accounts of Banks, Bankers, Corporations and Individuals solicited. We invite correspondence.

THE FIRST NATIONAL BANK
 OF KEY WEST, FLA.
 Falted States Depository and Disbursing Agent.
 Capital - - - - - \$100,000
 Surplus and Undivided Profits - \$40,000
 A general banking business transacted.
 Special attention given to collections.

INVESTMENT SECURITIES

Southern Stocks and Bonds
 Municipal and Corporation
 Cotton Mill Stock a Specialty
 WM. S. GLENN, Broker - SPARTANBURG, S. C.

Southern Investment Securities

Timber, Coal and Mineral Lands
 J. H. C. BARR
 Land Title Building Philadelphia, Pa.

Delaware Trust Company
 WILMINGTON, DELAWARE
 INCORPORATING under broad, liberal, safe and stable Delaware laws. A fully equipped department for proper organization and registration of corporations.
 BANKING AND TRUST department gives special attention to out of town customers' accounts.
 TITLE DEPARTMENT examines and guarantees title to realty throughout Delaware.
 REALTY DEPARTMENT has sites for manufacturing industries. Modern Methods of management of property.
 EDWARD T. CANBY, President.
 J. ERNEST SMITH, V.-Pres. and Gen. Council.
 WM. G. TAYLOR, Treasurer.
 HARRY W. DAVIS, Secretary.
 W. W. PUSEY, 2d Title and Real Estate Officer.

H. B. Wilcox, President. Blanchard Randall, V.-Pres.
 Wm. S. Hammond, Cashier.
 Saml. W. Tschudi, Asst. Cash. R. E. Bolling, Asst. Cash.

The First National Bank
 17 South St., Baltimore, Md.

Capital - - - - - \$1,000,000
 Surplus and Net Profits - - - 400,000
 Deposits - - - - - 6,500,000

Especially well equipped to handle the business of Southern Banks, Corporations, and Individuals and Manufacturers. We cordially invite correspondence and interviews.

The National Exchange Bank
 OF BALTIMORE, MD.
 Hopkins Place, German and Liberty Sts.
 Capital \$1,000,000
 July 15, 1908, Surplus and Profits \$671,631.60

OFFICERS:
 WALDO NEWCOMER, President.
 SUMMERFIELD BALDWIN, Vice-Pres.
 R. VINTON LANDDALE, Cashier.
 C. G. MORGAN, Asst. Cashier.
 Accounts of Mercantile Firms, Corporations, Banks, Bankers and Individuals Invited.

JOHN NUVEEN & CO.

1st Nat. Bank Bldg., CHICAGO
 We purchase SCHOOL, COUNTY and MUNICIPAL BONDS. Southern Municipal Bonds a Specialty.
 Write us if you have bonds for sale.

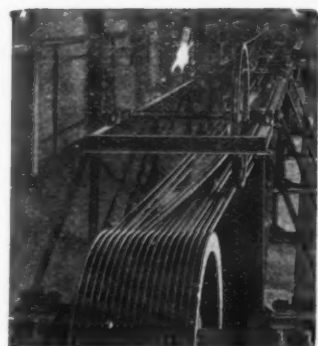
GO SOUTH!

FOR SALE Timber, Phosphate, Coal, Iron, Farm, Ranch, and Other Properties and Investments, in Southern States, West Indies and Mexico.

SOUTHERN STATES DEVELOPMENT CO.
 (Brokers) GEO. B. EDWARDS, President,
 Tribune Building, New York N. Y.

Southern Steam Railroad Securities

DEALT IN
F. J. LISMAN & CO.
 Specialists in Steam R. R. Securities
 Members New York Stock Exchange
 30 Broad Street NEW YORK
 39 Pearl Street, Hartford.
 Land Title & Trust Bldg., Philadelphia.



Cut Down Transmission Expense

Do Away With Belts and Pulleys. Put in "American" Rope Drives.

"American" Rope Transmission saves money right from the very beginning. It costs from 15% to 50% less at the start. This first cost is the last cost. No external dressing needed. No frequent tightening required.

"American" Rope Drives occupy a small space. They grip tighter, so transmit more horsepower. Supporting bearings can be placed closer together. No loss of time by breakdowns.

They run to every floor from main driving pulley, any distance—any direction. Exact shaft alignment unnecessary.

New Factories largely use "American" Transmission. Investigate it—write us. Our engineers will show you where "American" Rope Drives will put money in your pocket—and keep it there. They will cheerfully submit you plans and estimates.

American Manufacturing Co.
 Makers of "AMERICAN" Transmission Rope
 63-65 Wall Street NEW YORK CITY

CAPITAL AND SURPLUS - - - - - \$3,500,000

THE BALTIMORE TRUST CO.

BALTIMORE, MD.
 Solicits Accounts of Banks, Bankers, Corporations and Individuals.
 Interest Allowed on Deposits Subject to Check.
 Special Rates Made on Time Deposits.

OFFICERS

DOUGLAS H. GORDON, President
 GEORGE C. MORRISON, Vice-Prest.

CHAS. D. FENHAGEN, Vice-Prest.
 EDWIN W. POE, Sec.-Treas.



BUSINESS ANALYSTS INVESTIGATORS SYSTEMATIZERS

YOUR BUSINESS SOLICITED

P. W. ROBERTSON, President
 Certified Public Accountant.
 Fellow Institute of Accounts, New York.
 Fellow Va. Society of Public Accountants.

WE BUY City, County, School and Drainage BONDS

FROM MUNICIPALITIES OR CONTRACTORS
 We are in position to pay HIGHEST PRICES. Write or wire us your offerings.
THE NEW FIRST NATIONAL BANK, Assets, \$5,000,000 Columbus, Ohio

We Finance

Electric Light, Power and Street Railway Enterprises
 With Records of Established Earnings

We Offer

Bankers and Investment Dealers
 Proven Public Utility Securities
 Correspondence Solicited

Electric Bond and Share Company

(Paid-up Capital and Surplus, \$6,314,000)
 71 Broadway, New York

SURETY BONDS

Fidelity & Deposit Co.

OF MARYLAND

Home Office, - - BALTIMORE, MD.

Total Assets Dec. 31, 1911, \$8,133,000.57

Pioneer Surety Co. of the South.
 Becomes Surety on bonds of every description.

AGENTS IN ALL PRINCIPAL CITIES

HARRY NICODEMUS, Sec'y and Treas.
 EDWIN WARFIELD, President

TO REACH INVESTORS

ADVERTISE IN THE

FINANCIAL REVIEW

ESTABLISHED 1882.

WEEKLY—\$2.00 A YEAR

2 Rector Street NEW YORK

CRUSSELLE AUDIT CO.

(INCORPORATED)

ACCOUNTANTS AUDITORS
 SYSTEMATIZERS

1006 Candler Bldg. ATLANTA, GEORGIA
 All audits conducted by or under direct supervision of members of the Company.

CHARLES NEVILLE

Accountant and Auditor

BUSINESS SYSTEMS

501-502 Savannah Bank and Trust Co. Bldg.

SAVANNAH, GA.

Long Distance Phone

References—Any Bank in Savannah

CORPORATIONS ORGANIZED
 CAPITAL NEGOTIATED

For firms who desire additional capital to increase their business. Will contract to sell issue of stock or bonds of any legitimate business enterprise, either developed or undeveloped.

C. R. SKINNER,

Fidelity Building, Philadelphia, Pa.

COTTON YARNS

Paulson, Linkroom & Co.

COMMISSION MERCHANTS

NEW YORK PHILADELPHIA CHICAGO
 87-89 Leonard Street 120 Chestnut Street 206 S. Market Street

RESOURCES - - - - - \$14,975,352.57

DEPOSITS DEC. 31, 1909.....\$ 8,041,252.59

DEPOSITS DEC. 31, 1910..... 8,809,843.00

DEPOSITS DEC. 31, 1911..... 10,344,570.57

This growth indicates that we have the ability and disposition to give GOOD TRUST COMPANY SERVICE. We can prove it—to your advantage.

ALLOWS INTEREST on daily balances of \$500 or over, subject to check, and special rates for time deposits.

ACTS AS TRUSTEE under mortgage, Registrar and Transfer Agent of Stocks and Bonds of Corporations.

Securities held on deposit for out-of-town corporations and individuals.

Acts as Financial Agent for Municipalities and Corporations.

MERCANTILE TRUST & DEPOSIT COMPANY

OF BALTIMORE

CAPITAL - \$1,500,000.00 SURPLUS - \$3,000,000.00

Insurance Co., authorized capital \$1,000,000, is reported to have begun business; C. H. Ellis, president; S. Locke Breaux, vice-president; W. B. Thompson, vice-president; A. Dummer, vice-president; E. G. Simmons, vice-president and agency manager; E. J. McGivney, general counsel; Dr. Morton Souchon, medical director; Jos. L. Wright, secretary and assistant treasurer; P. M. Lamberton, treasurer; Isaac Davenport, actuary; directors, C. H. Ellis, S. Locke Breaux, W. B. Thompson, A. Dummer, J. B. Sinnott, H. B. Schreiber, Lynn H. Dinkins, Eugene J. McGivney, E. G. Simmons and Frank Dameron.

La., Shreveport.—The Red River Bank & Trust Co., capital \$500,000, has filed articles of incorporation; directors, J. Homer Jordan, W. V. Robson, John P. Scott, N. C. Blanchard, B. A. Kobler, C. W. Lane, H. B. Hearn, P. G. Schelling and J. W. Elston.

Miss., Jackson.—Official: The Commercial Savings Bank chartered and incorporated; capital \$25,000; surplus \$500; directors, J. L. Gaddis, president; R. B. Mims, J. L. Enoch and L. M. Gaddis, vice-presidents; R. W. Millsaps, Jos. Asher, W. C. Wells, Jr., T. B. Gaddis, S. L. McLaurin, Eugene Atkinson, T. K. Currie, R. E. Kennington, G. C. McLaurin and W. H. Lane. Business is to begin about April 1.

Miss., McHenry.—Press dispatches state that a new bank is being organized.

Mo., St. Louis.—The Polish Financial Association, capital \$10,000, is reported chartered; incorporators, John Kaszewski, Stanislaus Gilbowski, John Kuczman, John L. Stroszewski, Kazimierz Nowak, Roman Stranz, Michael W. Kalinowski, Frank Mitulski, Stanislaus Lorkowski, Joseph Szpotanski, John Skoszek, Frank Wilczuski and Stanislaus Lassa.

N. C., Candor.—The Bank of Candor is reported to have begun business with D. C. Ewing, president; Frank Page, vice-president, and H. S. Poole, cashier.

N. C., Henderson.—Official: The Liberty Loan & Real Estate Co., capital \$10,000, began business March 1 with G. W. Hawkins, president, and J. E. Baxter, vice-president.

N. C., Scotland Neck.—A building and loan association is reported being organized by Dr. J. E. Shields and others.

N. C., Maxton.—Official: The Mutual Building and Loan Association incorporated; authorized capital, \$50,000. Directors: Lucy Williams, president; O. C. Spaulding, vice-president; J. P. Wiggins, secretary, treasurer and attorney; M. R. Gibson, J. E. Harbourn, F. C. Frostick, W. M. Currie, H. C. McNair, J. D. Croom, Sr., and J. G. Baldwin. Business is to begin April 20.

Okla., Eufaula.—The Oklahoma Title Co., capital \$5000, is reported incorporated by J. N. Wilkinson, S. D. McCluskey of Muskogee and J. C. Smock of Eufaula.

S. C., Bishopville.—Official: The Merchants and Planters' Bank chartered; capital \$50,000; J. S. Corbett, president; A. M. Lee, vice-president; R. W. McLeadon, solicitor, and W. W. Watson, cashier. Business has begun.

S. C., Columbia.—The People's Bank is reported to have been granted a commission; capital \$50,000; incorporators, James A. Hoyt, A. B. Langley and T. C. Lipscomb. The bank will be located on Main St.

Tenn., Chattanooga.—The Superior Live Stock & Casualty Co., capital \$200,000, is reported organized with officers thus: Z. W. Wheland, president; T. T. Wilson, vice-president; C. S. Steward, treasurer; C. H. Royalty, secretary and general manager. Among the directors and stockholders are Jesse M. Littleton, E. M. Jones, W. R. Long, W. B. Davis and Dr. J. R. Rathmell. Offices are in the Hamilton National Bank Bldg.

Tenn., Leliper's Fork.—Official: The Bank of Leliper's Fork chartered; capital \$10,000; directors, Bennett Hunter, president; W. L. Pinkerton, cashier; W. J. Moss, H. H. Davis, J. T. Morton, W. D. Fulton and John Thornton. Business began March 4.

Tex., Bonita.—The First National Bank of Bonita has begun business; capital \$25,000; surplus \$1000. J. C. Howard is president.

Tex., Eastland.—The Ferrell-Michael Abstract & Title Co., capital \$5000, is reported incorporated by J. M. Ferrell, W. S. Michael and Mark Stamps.

Tenn., New Tazewell.—A new bank is reported organized.

Tex., Pharr.—Official: The First National Bank chartered; capital \$25,000; surplus \$500. Horace Jones is president and H. N. Pharr, vice-president. Business will begin about May 1.

Tex., Port O'Connor.—C. S. E. Holland and associates are reported to have organized a new building and loan association.

Tex., Rio Hondo.—Official: The First State Bank of Rio Hondo chartered; capital \$10,000. Organizers: Alba Heywood, E. H. Smith, B. H. Frazier, Judge S. Spears and J. L. Laudrum, all of San Benito, Tex. Business is about to begin.

Fla., St. Petersburg.—The Home Mechanics & Security Co., capital \$100,000, has filed articles of incorporation. President, E. Byrd Squire; vice-president, A. C. Odom, Jr.; secretary and treasurer, C. C. Odom; general manager, A. C. Odom, Jr.; board of directors, A. C. Odom, Jr., C. C. Odom, E. Byrd Squire and B. W. Robbins.

Tex., Waco.—Official: National Exchange Fire Insurance Co. is organized with authorized capital and surplus of \$1,000,000 and \$500,000, respectively; C. A. Weatherd, president; Sam Sanger, J. H. Lockwood, James B. Baker, Waco; R. E. L. Upchurch, Bedias; B. P. Moore, Bay City, vice-presidents; Nat S. Smith, secretary; W. H. McCullough, treasurer, and Allan D. Sanford, general counsel. Date of opening not yet decided.

W. Va., Ravenswood.—The McKinley Security Bank is reported incorporated with \$25,000 capital by G. T. Douglas, Charles P. Moore, C. T. Kneerian, E. E. McKinley and Charles L. Brown of Ravenswood, and R. H. Douglas of Millwood. An official letter says this is simply a taking over of the business of McKinley & Co., bankers.

NEW SECURITIES.

Ala., Moulton.—Official: Steps are to be taken at once to float \$123,000 of Lawrence county road bonds voted March 18. J. C. Kempe is Judge of Probate.

Ala., Selma.—Reported voted: \$35,000 of school bonds. J. L. Clay is Mayor.

Ark., Ashdown.—Reported that \$30,000 of school bonds are to be sold. Address the School Board.

Ark., Gravette.—Official: Bids will be opened May 15 for \$24,000 of 5 per cent. 20-year water-works and electric-light bonds; denomination \$1000; dated May 15, 1912. Address A. C. Veach, Mayor.

Ark., Hamburg.—Official: The Municipal Water and Light Plant of Hamburg, Ark., will issue additional bonds to extend mains and electrical service. Address The Mayor or Judge James Gould, financial agent, Pine Bluff, Ark.

Ark., Jonesboro.—W. L. Compton & Co., St. Louis, are reported to have purchased \$40,000 of 5 per cent. high-school building bonds.

Fla., Arcadia.—Official: Farson, Son & Co., Chicago, have purchased \$70,000 of 5½ per cent. De Soto county courthouse bonds.

Fla., Fort Meade.—Official: An election is to be held April 16 to vote on \$29,000 of water-works and sewerage bonds. R. C. McClenahan is Mayor.

Fla., Kissimmee.—The Alabama Paving Co. is reported to have been awarded at par \$25,000 of 6 per cent. 15-year paving bonds. J. R. Gilbert is City Clerk.

Fla., Inverness.—Official: \$45,000 of 6 per cent. Citrus county courthouse bonds have been purchased by Farson, Son & Co. of Chicago.

Fla., Palatka.—Official: \$35,000 of 5 per cent. Putnam county school bonds have been purchased by Farson, Son & Co. of Chicago.

Fla., Tampa.—Official: Farson, Son & Co., Chicago, have purchased \$25,000 of 5 per cent. Hillsboro county school bonds.

Fla., West Palm Beach.—Official: Farson, Son & Co., Chicago, have purchased \$16,000 of 5 per cent. Palm Beach county school bonds.

Ga., Americus.—Official: Defeated: Light and water bonds. J. E. Mathis is Mayor.

Ga., Buford.—April 3, it is reported, an election is to be held to vote on \$10,000 of paving, \$5000 of water-works and \$5000 of school bonds.

Ga., Carrollton.—April 3 an election is to be held to vote on \$3000 of sewerage and drain, \$4000 of water-works, \$25,000 of city hall and \$10,000 of street improvement 5 per cent. bonds. E. A. Merrell is Mayor.

Ga., Senola.—Reported voted: \$10,000 of 6 per cent. school bonds. L. L. Hutchinson is Mayor.

Ga., Social Circle.—Official: The \$8000 of 5 per cent. 20-year school bonds voted March 14 will be sold on July 1; denomination \$1000. Address P. A. Stanton.

Ga., Washington.—Official: Robinson, Humphrey, Wardlow Co., Atlanta, Ga., purchased on February 20, at par, accrued interest and premium of \$500, the \$30,000 of 5 per cent. water-works extension and electric-light plant bonds voted July 14, 1911; denomination \$1000; dated January 1, 1912; maturity July, 1911. E. A. Barnett is Mayor.

Ky., Barbourville.—Wm. R. Compton & Co., St. Louis, are reported to have been awarded at \$90 premium \$17,500 of 5 per cent. 10-20-year high-school bonds.

Ky., Lexington.—The \$4545.16 of street improvement bonds offered March 25 were turned over to the contractors in payment for the work. J. E. Cassidy is Mayor.

La., Opelousas.—The Interstate Bank & Trust Co. of New Orleans is reported to have been awarded at par, accrued interest, etc., the \$40,000 of sewer bonds.

La., Vinton.—Reported voted: \$106,000 of bonds of Vinton Drainage District.

Md., Annapolis.—A bill has passed the Legislature providing for the issuing of \$400,000 of new State Normal School bonds.

Md., Chestertown.—The Legislature is reported to have passed a bill providing for the issuing of courthouse bonds.

Md., Easton.—Official: Bids will be received until 4 P. M. April 11 for \$34,000 of 4 per cent. 25-year street-improvement bonds; dated July 1, 1910; denomination, \$100, \$500 and \$1000. Address John S. McDaniel, Town Clerk. Martin M. Higgins is Mayor.

Miss., Clarksdale.—Coahoma county will, it is reported, issue \$50,000 of road and bridge bonds.

Miss., Paulding.—Reported that bonds of road district No. 5, Jasper county, are to be issued.

Miss., Vicksburg.—Reported that bids were received until noon April 2 by J. D. Laughlin, County Clerk, for \$3300 of 5 per cent. 5-20-year Warren county road and bridge bonds; dated April 2, 1912.

Miss., Yazoo City.—Notice is given that \$30,000 of water bonds are to be issued. H. W. McCormick is City Clerk.

Mo., Greenfield.—Reported voted: \$47,000 of road-improvement bonds.

Mo., Lebanon.—Official: \$30,000 of school bonds are to be issued; denomination \$1000. Address B. F. Harris.

Mo., Mount Vernon.—Reported voted: \$50,000 of Lawrence county road bonds.

Mo., Sedalia.—April 20, it is reported, an election is to be held to vote on \$300,000 road-improvement bonds.

Mo., West Plains.—Reported sold: \$33,000 of 4½ per cent. 20-year school district building bonds.

N. C., Graham.—Official: C. A. Webb & Co. of Asheville have purchased \$15,000 of 5½ per cent. Alamance county funding bonds.

N. C., Greensboro.—Reported that an election is to be held within the next 60 days to vote on \$80,000 of street and \$20,000 of sewer bonds.

N. C., Randolph.—April 18, it is reported, an election is to be held to vote on railroad aid bonds.

N. C., Thomasville.—J. E. Green, Mayor, will, it is reported, receive bids until 10 A. M. April 20 for \$10,000 of 5 per cent. 30-year water-works and sewer bonds.

N. C., Wentworth.—Steps are reported being taken to issue \$500,000 of Rockingham county road bonds.

Okla., Ardmore.—Official: R. J. Edwards, Oklahoma City, purchased on February 20, 1912, at 101.54 and accrued interest, \$50,000 of 5 per cent. 25-year water-supply bonds; denomination \$1000; dated February 1, 1912; maturity February 1, 1937. G. P. Selridge is finance commissioner.

Okla., Bristow.—A Fort Smith firm is reported to have purchased, at \$50 premium and accrued interest, \$15,000 of funding and water-works extension bonds.

Okla., McAlester.—George I. Gilbert of Oklahoma City is reported to have been awarded at par, accrued interest and premium of \$205 the \$50,000 of water bonds.

Okla., Oklahoma City.—Whit M. Grant, Mayor, writes that election ordered for April 2 to vote on sewer and bridge construction bonds was called off.

Okla., Perkins.—Reported voted: \$35,000 of water-works bonds.



We specialize in River, Harbor, Canal and Submarine Rock Excavations. Steam and Electric Railway Construction. Hydraulic and Electrical Engineering. Hydro-Electric and Water-Power Development. Irrigation, Reclamation and Drainage.

THE BRINDLEY COMPANY
CONTRACTING ENGINEERS,
Whitehall Building, 17 Battery Place,
NEW YORK.

Banks and Bankers

Write us now for our special offer on

Pocket Check Books

We are making a wonderful proposition and our salesmen cannot reach all of you.

Young & Selden Co.

BANK STATIONERS BALTIMORE, MD.
Lithographing, Printing, Envelopes
Blank Book Making, Book Binding
Letter Heads, Office Supplies
Steel Die Work



How 130,000 Cut Their Costs

is the story of 19 Burroughs books. It tells how the 20 years of Burroughs experience has been boiled down into books for many different businesses.

The story is printed, with pictures of the books, in this week's "Saturday Evening Post" and "Literary Digest," in the April business magazines, and without pictures in 200 other publications.

If you don't see the story, ask us for the book of special Service Forms for your business. No cost or obligation.

Burroughs Adding Machine Co.
80 Burroughs Block, Detroit, Michigan

To Manufacturers and Capitalists

Contemplating the Establishment of Industrial Enterprises

Attention is called to the exceptionally favorable location of

NEWPORT NEWS, VA.

on Hampton Roads, fifteen miles from the sea. Deep water, railway and sea transportation facilities unrivaled. Climate salubrious. Apply to

W. A. POST, President

OLD DOMINION LAND COMPANY
30 CHURCH ST., NEW YORK

Okla., Talihina.—The Terry Construction Co., Poteau, Okla., is reported to have purchased at par \$25,000 of 6 per cent. 30-year water-works bonds.

Okla., Wapanucka.—Reported that Speer & Dow of Fort Smith, Ark., were awarded at par the \$7000 of 6 per cent. water-works bonds.

S. C., Columbia.—According to press dispatches an election will be held next August to vote on \$1,000,000 of asylum bonds.

S. C., Greenwood.—Official: An official letter confirms report that the question of issuing \$150,000 of street-improvement bonds is under consideration. Kenneth Baker is Mayor.

S. C., Holly Hill.—Official: Bids will be opened April 15 for \$8000 of 30-year school-building bonds; interest to be about 6 per cent.; dated April 1, 1912; denomination \$500. Bonds were voted March 19, 1912. Address J. Francis Folk.

S. C., Scranton.—Official: Voted March 19:

\$6000 of school district school-building bonds; interest not exceeding 6 per cent. Address Wilcox & Wilcox, Florence, S. C.

Tenn., Bristol.—A Philadelphia firm is reported to have purchased \$300,000 of 4½ per cent. Sullivan county road bonds at a premium of \$275.

Tenn., Chattanooga.—Official: Voted: \$250,000 of 4½ per cent. 30-year park bonds. Address T. C. Thompson, Mayor.

Tenn., Johnson City.—The Davies-Bertram Company of Cincinnati is reported to have purchased at \$10 premium the \$212,000 of 5 per cent. 30-year water-works bonds.

Tenn., Knoxville.—John M. Currier, clerk of Knox county, writes: "No bond issue in the near future." This would deny report that school bonds are to be issued.

Tenn., Spencer.—Official: Bids were received until 1 P. M. March 30 for \$50,000 of 5 per cent. 5-30-year Van Buren county pike bonds; dated May 1, 1912; denomination \$500. E. N. Haston is clerk.

Tenn., Tullahoma.—Reported voted: \$25,000 of sewer bonds.

Tex., Amarillo.—Seasongood & Mayer of Cincinnati, O., are reported to have purchased \$25,000 of sewer and paving bonds at \$75 premium.

Tex., Austin.—The Attorney-General has approved the following securities: \$15,000 of district No. 1; \$30,000 of district No. 2; \$30,000 of district No. 4; \$11,000 of district No. 5; \$8000 of district No. 6 Leon county 5 per cent. 5-40-year road bonds; \$3000 of 5 per cent. Longview water-works bonds; \$1400 of 5 per cent. 5-20-year Lubbock county common school district No. 2 bonds; \$300,000 of 5 per cent. 30-40-year Orange county road bonds; \$10,000 of 5 per cent. 30-40-year bonds of District No. 21, Harris county, school bonds; \$4700 of 5 per cent. 10-40-year bonds of Erath county common school district No. 80.

Tex., Benbrook.—Reported voted: \$3000 of school bonds. Address Commissioners, Tarrant county.

Tex., Big Springs.—W. S. Hughes & Co.,

Brady, Tex., are reported to have purchased \$100,000 of Howard county road bonds.

Tex., Fort Worth.—An official letter confirms report that Tarrant county road and bridge bonds have been sold and will be delivered April 10.

Tex., Fort Worth.—Official: Bolger, Mosser & Wellman, Chicago, Ill., purchased at par and accrued interest and premium of \$44,950 the \$1,000,000 of 5 per cent. Tarrant county road and bridge bonds; denomination \$1000; voted December 12, 1911; dated April 10, 1912; maturity 40 years; optional after 10 years. R. E. Bratton is County Judge.

Tex., Houston.—Press dispatches state that the \$1,250,000 of Houston (Harris county) ship-channel bonds have been sold.

Tex., La Grange.—April 2, it is reported, an election was held to vote on \$17,000 of sewer bonds.

Tex., Raymondville.—Press dispatches state that bids will be received by the board of directors until 10 A. M. April 16 for \$100,000 of 5½ per cent. Union Irrigation district bonds.

Tex., San Angelo.—An official letter says street-improvement bonds have not yet been sold. J. D. Hassell is Mayor.

Tex., Taylor.—April 30, it is reported, an election is to be held to vote on \$25,000 of 5 per cent. street-improvement bonds; denomination \$1000. C. M. Still is Mayor.

Va., Cambria.—The question of issuing bonds for street improvements is reported under consideration.

Va., Culpeper.—Official: April 20 an election is to be held to vote on \$120,000 of Cataulpa District and \$50,000 of Jefferson District 5 per cent. 34-year public-road bonds; denomination \$500. W. E. Coons is County Clerk.

Va., Gordonsville.—Reported voted: \$10,000 of water-extension bonds.

Va., Radford.—Official: Farson, Son & Co., Chicago, have purchased \$35,000 of 5 per cent. school bonds.

Va., Graham.—According to press dispatches, an election is to be held April 27 to vote on \$50,000 of municipal improvement bonds.

Va., Lexington.—Official: The Equitable Life Insurance Co., New York, has purchased at par \$55,000 of the \$75,000 of 4½ per cent. 30-year water supply bonds voted January 31, 1911; denomination \$1000; dated February 1, 1912; maturity February 1, 1942; optional after 10 years. H. C. Wise is chairman finance committee.

Va., Suffolk.—Official: \$40,000 of 5 per cent. 30-year school, street and other public improvement bonds are to be issued; denomination \$500. Address J. B. Pinner, Finance Commissioner.

W. Va., Berkeley Springs.—Reported that \$25,000 of high-school bonds were recently defeated. L. J. Fry is secretary Board of Education.

W. Va., Fairmont.—The State School Fund is reported to have purchased \$25,000 of 5 per cent. 34-year school district building bonds.

FINANCIAL NOTES.

The State Bank & Trust Co. of Abilene, Tex., will, it is reported, increase its capital from \$55,000 to \$100,000.

The United States Trust Co., Washington, D. C., proposes, it is stated, to increase its capital from \$1,000,000 to \$1,250,000.

Press dispatches state that the National Bank of Tifton, Ga., has absorbed the business of the Citizens' Bank of Tifton.

The Citizens' National Bank of Meridian, Miss., is reported to be doing business in its new building at Twenty-second Ave. and 6th St.

The Independent Pneumatic Tool Co., Chicago, Ill., has declared the regular quarterly dividend of 2½ per cent., payable April 10, to stockholders of record on March 30, 1912.

The Commercial State Bank of Birmingham, Ala., according to press dispatches, on April 1 took possession of the Clark Bldg. at the corner of Fourth Ave. and 20th St. It is also stated that the capital has been increased from \$50,000 to \$100,000.

A condensed statement of 688 State banks and trust companies in Texas at close of business February 20, 1912, shows loans and discounts \$50,897,755; loans, real estate, \$9,493,636; due from other banks and bankers, subject to check, \$19,881,970; capital stock paid in, \$24,612,500; surplus fund, \$4,144,636; undivided profits, net, \$2,648,482; due to banks and bankers, subject to check, \$4,073,963; individual deposits, subject to check, \$54,100,063; time and demand certificates of deposit, \$5,185,426; total resources, \$50,976,796.

Hartford Fire Insurance Company, of Hartford, Conn.

The estimated value of Personal Property, and of each Building to be insured, and the sum to be insured on each, must be stated separately. When Personal Property is situated in two or more Buildings, the value and amount to be insured in each must be stated separately. When insurance is wanted on Personal Property, the same description should be given of the Building containing the property, as if Insurance was wanted on the Building.

Application of Robert E. Lee, U.S.A.,
for Insurance against loss or damage by fire by the **HARTFORD FIRE INSURANCE COMPANY**, in the sum of Five Thousand Eight Hundred Dollars on the property specified: the value of the property being estimated by the Applicant.

On	TO BE INSURED	VALUATION
On <u>Dwelling House</u>	<u>\$5000</u>	<u>\$20,000</u>
On <u>Barn</u>	<u>\$800</u>	<u>\$1200</u>

The Applicant will answer the following questions, and sign the same, as a description of the premises on which the Insurance will be procured.

1. BUILDING—Is it stone, brick, or wood? How many stories high? Where situated? When built? Which part occupied by Applicant?
Dwelling of Brick, main building two stories high, and wings one story, in Alex. Co. Va., built about the year 1820. All occupied by applicant. The Barn is of brick, one story high, with a stone basement. The main building of the Mansion House is covered with slate and the wings with gravel. The Barn is covered with gravel. The gutters are metal. The division walls are of brick. There is not a scuttle in the roof of the building.
2. WALLS—Are the division walls of brick? Are they entire? Do they rise above the roof?
Walls are of brick. The division walls are of brick. There is not a scuttle in the roof of the building.
3. ROOF—What is it covered with? Are the gutters stone, metal or wood? Is there a scuttle and stairs to it?
The roof is covered with slate. The gutters are metal. There is not a scuttle in the roof of the building.
4. Are the stoves and apparatus for using fire properly secured, and will you engage to keep them so?
Stoves are properly secured and will be kept so.
5. Do the pipes enter a chimney? And is it built from the ground? Do pipes run one or more wood partitions or floors? If so, how secured?
Pipes enter the ground and are properly secured.
6. What fuel is used? And how are ashes disposed of?
Wood is used. Ashes are put on the ground.
7. What material is used for lighting?
Gas is used for lighting.
8. For what purpose is the building used? How many tenants?
The building is used as a residence. There are no tenants.
9. Distance and materials of other buildings, within 100 feet of the one to be insured? And how occupied?
The building is situated on a lot of 44 acres. There are no other buildings within 100 feet.
10. What other insurance is there upon the property, and at what office? How this Company any other insurance within 100 feet of this risk?
There is no other insurance upon the property.
11. Is the property mortgaged? And to what amount? Is there any insurance by the mortgagee?
The property is mortgaged for \$5000. There is no insurance by the mortgagee.
12. Is there any other party interested in the property?
There is no other party interested in the property.
13. Has the building a lightning rod? If so, is it on the old or new plan?
The building has a lightning rod on the old plan.



ARLINGTON, HOME OF ROBERT E. LEE

THIS is a reproduction of an application for a policy in the Hartford bearing the signature of Robert E. Lee, the greatest of the South's leaders during the Civil War.

In a previous advertisement we reproduced a policy written by the Hartford on the Home of Abraham Lincoln.

The Hartford Fire Insurance Company, in its business experience of over a hundred years, has protected alike, men of the North and South. No sectional lines exist in the business of this great company, and it will give you the same protection it gave to Lee and Lincoln.

When next you need fire insurance INSIST on the HARTFORD

And the said applicant hereby covenants and agrees to and with said Company, that the foregoing is a just, full and true exposition of all the facts and circumstances in regard to the condition, situation, value and risk of the property to be insured, so far as the same are known to the applicant and no material to the risk.

Dated October 17 1899

For 1 year at 40 cents.

1. at \$2. (See Make a diagram of the premises on the other side of this sheet.)

R. E. Lee Applicant.

AN AUTOGRAPH OF ROBERT E. LEE

Classified Opportunities

MEN WANTED

HIGH-GRADE SALESMEN having acquaintance among large manufacturers will hear of side line paying liberal commission; no samples required. Address "Allen," Box 963, Cincinnati, Ohio.

WANTED—Traveling or local men; all sections of the country; profitable side line; commission or salary; good men average \$100 weekly. For particulars address The Sun Chemical Company, Richmond, Va.

TOWN of eight thousand population, with perfectly organized commercial club, wants an experienced secretary; state salary expected, experience, furnish references and give age in first letter. Address No. 986, care Manufacturers Record.

WANTED—A first-class salesman who understands handling and selling woodworking machinery, with headquarters at Atlanta, Georgia, and to travel in surrounding territory. Address, with references, H. B. Smith Machine Co., Smithville, N. J.

WANTED—Office manager for wholesale hardwood and yellow-pine lumber, with headquarters in Philadelphia; prefer man who can invest some money in the business; good salary to right man. Address No. 975, care Manufacturers Record.

WANTED—By a jobbing corporation of recognized standing and commercial rating, a young man for treasurer and bookkeeper; must be a stockholder to extent of \$5000; profit sharing in stock to insure his interest and co-operation in the business; must be thoroughly reliable and competent. Apply, giving details, "N. I. O.," P. O. Box No. 383, Norfolk, Va.

WANT SALES MANAGER to take charge of wholesale department for a manufacturing firm located in Tennessee to handle hardwoods and yellow pine; party must have five to ten years' experience and be willing to put \$5000 to \$10,000 in the business; wanted at once. Write us and we will furnish you full details. Address No. 973, care Manufacturers Record.

WANTED—A factory whose product is a full line of cottonseed-oil machinery, press-room and separating, etc., thoroughly up to date, desires to increase its traveling force. A position of this kind is open to a thoroughly efficient man with capacity and ability to handle such a line. Give references, state age, experience and salary expected. Address No. 983, care Manufacturers Record.

WANTED—Building estimator and general all-around construction man, capable of making plans for buildings and fully qualified to figure accurately on all classes of general construction, small and large; must be able to keep an accurate cost system and have thorough knowledge of the general routine of a builder's office. Address, giving full particulars, references, experience, age and salary in first letter to "Builder," P. O. Box 1162, Dallas, Texas.

AGENCIES WANTED

MANUFACTURERS' SALES CO., 632 Audubon Bldg., New Orleans, wishes to represent a few responsible manufacturers of high-grade specialties or strong selling lines in tributary territory.

SITUATIONS WANTED

AN EXPERT, practical and executive manager of sheet-metal stamping and drawing, designer of special machinery and dies. Address No. 977, care Manufacturers Record.

YOUNG MAN of good address, 23 years old, desires position as traveling salesman for first-class machinery concern; 3 years' experience in machinery business, 1 year on road; employed at present, but desires to make change; will furnish references. Address No. 989, care Manufacturers Record.

HIGHWAY ENGINEER, 17 years' experience, will be open for engagement about April 1; macadam, gravel and sand-clay roads a specialty; or will act in a consulting capacity, making examinations of materials, surveys, plans and specifications; New York State experience. Address No. 958, care Manufacturers Record.

COMPETENT and energetic all-around office man who has gone through the mill of experience from copying letters to signing checks; has passed civil-service examinations as clerk and stenographer; experienced bookkeeper; capable correspondent; executive ability as office manager; licensed to practice law; can make his ability felt in position of responsibility. Splendidly qualified as private secretary. Address No. 990, care Manufacturers Record.

OFFICE MANAGER and accountant with fourteen years' training in all details of contracting, accounting, is open for position along similar lines; able, active, untiring; thirty; references. Address No. 993, care Manufacturers Record.

MECHANICAL ENGINEER now located in Northern city wishes to settle in South; eighteen years' experience in shop, drafting-room and teaching mechanical engineering, machinery, structural and power plant; would like to form connection with consulting engineer or manufacturer; technical graduate. Address No. 992, care Manufacturers Record.

Rate 20 cents per line per insertion. Minimum space accepted, four lines. Maximum space accepted, 24 lines. Allow seven words per line. Terms: Invariably cash with order; check, postoffice or express order or stamps accepted. No display type used. Questionable or undesirable advertisements will not be accepted. The assistance of our readers in excluding undesirable advertisements is requested. We reserve the right to refuse any advertisement. No patent medicine, whiskey or mining stock advertisements accepted. Rate for special contracts covering space used as desired within one year, as follows: 100 lines, 18c. per line; 300 lines 16c. per line; 500 lines or more, 15c. per line.

SITUATION wanted as representative for manufacturing concern in Hawaii Islands (Honolulu) or as sales agent; have a thorough knowledge of roofing materials, asbestos, metal, composition, etc.; coal-tar products, such as benzols, crocote, metallic paints, etc. Hardware specialties would also be an important factor there. I have had 19 years' experience (varied), traveling entire South approximately 14 years for a few prominent firms, and can furnish unquestionable references as to reliability and character. Address No. 991, care Manufacturers Record.

POSITION WANTED by young married man of good habits; experienced in the building business; thorough knowledge of plans and specifications; understands construction, taking quantities from plans, estimating, etc. Address No. 972, care Manufacturers Record.

CHEMICAL AND MECHANICAL ENGINEER with electrical experience wants position and possibly investment with prosperous going company; has had manufacturing and sales experience; 6 years superintendent of factory employing 50 men, and lastly manager of department in large machinery house; good references. Address No. 975, care Manufacturers Record.

CIVIL AND CONSTRUCTING ENGINEER wants position with bridge contractor, general contractor and builder, construction company, railroad or power-development company; will consider position as sales engineer for good line; technical graduate; 13 years' experience; good references. Address No. 962, care Manufacturers Record.

EDUCATIONAL

RENSSELAER POLYTECHNIC INSTITUTE, TROY, N. Y.—Courses in Civil, Mechanical and Electrical Engineering, and General Science, leading to the degrees of Civil Engineer (C.E.), Mechanical Engineer (M.E.), Electrical Engineer (E.E.), and Bachelor of Science (B.S.). Special courses in engineering and science. Splendidly equipped new engineering laboratories. Send for catalogues to Registrar.

BANKS

THE PALMETTO NATIONAL BANK, Columbia, S. C., capital \$250,000, solicits accounts of banks, firms, corporations and individuals, either commercial or savings accounts.

FLORIDA HOTELS

THE WINDSOR HOTEL, Jacksonville's finest and Florida's largest and best year-round hotel. Rates reasonable. American and European plan. Operating the finest European grillroom in the South. Thomas M. Wilson, proprietor.

CAPITAL WANTED

MANUFACTURING CONCERN with established business wants \$50,000 additional capital; would not object to working partner; situated in mountains of North Carolina; ideal climate and situation. Address No. 964, care Manufacturers Record.

WANTED—\$100,000 for five years at 6 per cent. on 5000 acres choice land in the onion and fruit district near Laredo, Texas, to develop the land and grow onions and tomatoes and put up canneries and other factories. F. P. Bickenbach, El Paso, Texas.

BUSINESS OPPORTUNITIES

FOR SALE—Oldest established hardware business in East Florida; stock about \$3000; must be sold to settle estate. Address Box C, Palatka, Fla.

TIME REGISTER—For Sale—a fifty-man Hawley time register, cheap; in good order. Address The Fitzpatrick Mercantile Co., Washington, Ga.

BUSINESS WANTED—Am looking for a good business for my son. Any business offered must stand investigation. Address M. Record, Box 976, Cherry Valley, Illinois.

WOULD like to get in communication with manufacturers of new articles of household necessities suitable for mail-order firm doing business through agents. Snyder Novelty House, Box No. 591, Birmingham, Ala.

ABSTRACTS OF TITLE a specialty. Loans negotiated. Inheritances investigated and procured. Real Estate Title Co., New Martinsville, W. Va.

WANTED—Someone to finance a water and electric-light plant and street-railway system in good live town in South. Franchises have already been granted and construction can commence at once. Address No. 994, care Manufacturers Record.

SALESMAN now working Middle West for largest manufacturer of enamel ware in the world would also like to sell some other good factory line. Calls twice a year on hardware and department stores in both large and small cities. Have plenty of time for good proposition. Address, with particulars about commission, etc., No. 994, care Manufacturers Record.

WE WANT TRACTS OF LAND located in or immediately adjoining thriving cities; must be well located and suitable for platting into town lots. F. J. Raymond Realty Co., Evansville, Ind.

MANUFACTURING RECIPE, 25c.—Diploma Raleigh Fair, 1906, for "Best Manufactured Chewing and Smoking Tobacco," awarded Wm. A. Fretwell, Wilson, N. C.

FOR SUBURBAN DEVELOPMENT—For Sale—Splendid tract of land on electric line, many other advantages for subdivision; close in, adjacent to growing suburban section of this rapid-growing city; something worth buying and developing or holding for advance. R. H. Scruggs, Norfolk, Virginia.

LAND AT AUCTION OUR SPECIALTY. We subdivide land into town lots, or large farms into small tracts, and sell at auction. We do vigorous, up-to-date advertising, and with our force of auctioneers, advertisers and ground men (the best in the South), we get the best results possible, and get it quick. We sell in ten States. If you want to convert your property into cash and interest-bearing notes, write or wire us. E. M. Andrews, Manager Southern Realty & Auction Co., Greensboro, N. C.

FOUNDRIY AND MACHINE BUSINESS.—I want to build up a concern that is willing to let me share in the profits I create. I am a young man, progressive, with wide reputation as authority on foundry practice. While not a cheap man, would not be averse to starting in a modest way with a small concern or a new concern, providing opportunities are good and I can have some interest in the business. Interview solicited. Address No. 974, care Manufacturers Record.

OPPORTUNITY for investment in the National Capital, right in the pathway of the city's greatest growth along Fourteenth and Sixteenth streets, and fronting on the National Rock Creek Park containing 1900 acres.

Property in this section is rapidly increasing in value. Present prices offer good investment. Easy terms, if desired. Robert E. Heater, 411-413 Colorado Building, Washington, D. C.

WANTED—A man to take up railroad promotion and construction proposition; bring engineer, take full charge of promoting and financing new line into rich section offering special advantages for heavy tonnage; cash bonuses of \$200,000 or more and townsites donations can be obtained; preliminaries should start in forty days. Full particulars to right party. Ed Kennedy, 916 Texas Ave., Houston, Texas.

FOR SALE—Half interest in electric-light plant and water-works in town foot Ozark Mountains, Arkansas; plants invoice \$4500; 50-year franchise. For quick sale, \$900 cash; balance, terms. Plant running and in best condition. Water-works alone can be made to pay. Address J. H. Gore, Box 112, Imboden, Ark.

I WOULD like to know whether there is any capitalist who would like to become interested in a charcoal furnace that has plenty of iron ore already developed and plenty timbered land to make charcoal. R. F. Watson, Elkton, Va., R. No. 1, Box 43.

WANTED—A party to install and operate an electric-light plant at Dendron, Virginia, a town of nearly 3000 inhabitants, with 5 churches and 21 stores. The town will guarantee a liberal sum each year for street lights. Correspondence invited. E. H. Gladden, Town Clerk.

FOR SALE—220-acre dairy farm in Hill county; produces 900 pounds butter monthly; all necessary machinery for creamery; owner leaving the States. Price \$23,000. Be quick. Ritter-Stein Realty Co., Dallas, Texas.

WANTED—One thousand business men in every State in the Union to send for circular of Lorand's "Old Age Deferred"; tells how to keep young even if old; 3000 sold to bankers alone; 500 pages; \$3.50 net. F. A. Davis Company, Publishers, 1914 Cherry St., Philadelphia, Pa.

INVESTMENT OPPORTUNITIES

OPPORTUNITY for investment in the National Capital, right in the pathway of the city's greatest growth along Fourteenth and Sixteenth streets, and fronting on the National Rock Creek Park containing 1900 acres.

Property in this section is rapidly increasing in value. Present prices offer good investment. Easy terms, if desired. Robert E. Heater, 411-413 Colorado Building, Washington, D. C.

MAPS AND BLUE PRINTS

MAPS OF TEXAS COUNTIES—We make blueprint maps of nearly all Texas counties and several Louisiana parishes. Write for prices on those desired. Singleton Bryan & Co., Beaumont, Texas.

TYPEWRITERS

IF YOU are interested in purchasing a high-grade typewriter and do not care to invest \$100 asked by the manufacturers, we would like you to investigate our remanufactured machines. Three days' trial allowed. Enterprise Exchange, Inc., 600 E. Baltimore street, Baltimore, Md.

FACTORY SITES

FREE—For manufacturing site, five or more acres railroad front, a part of 338 acres, 20 miles from Charlotte; S. A. L. R. R.; will sell all. G. B. Caldwell, Monroe, N. C.

INDUSTRIES WANTED

MISCELLANEOUS

CONROE, TEXAS, wants a barrel and box factory, farm implement factory, ice and electric-light plant, wagon factory. Have fine artesian water for steam. Address Secretary Progressive League.

SUFFOLK—The best manufacturing and distributing point in Virginia; six railroads and water transportation; plenty of labor; cheap fuel; electric power; seventy manufacturing plants in successful operation; opportunity for furniture and woodworking plants and any wholesale jobbing or manufacturing business; center of tidewater; richest farming section to be found; healthy; excellent schools and churches; filtered water, gas and sewer. Write Board of Trade, Suffolk, Va.

WANTED—Men with capital to buy interest in established concerns and to establish manufacturing plants; 10,000 hydro-electric horse-power, center of the hardwood district of the South and East; two furniture plants here; want chair, table and stove factories; stave and pulp mills; abundant cheap labor; low cost of living; fine water; hosiery and knitting mills do well in this territory. Write Board of Trade, Asheville, N. C.

INDUSTRIAL PLANTS FOR SALE

ELECTRIC LIGHT PLANT

FOR SALE AT A BARGAIN—Complete equipment of an electric-light plant, consisting of one 14x36 mill type Murray Corliss engine, 2 85 H. P. Atlas tubular boilers, 1 Gem City heater, 3 boiler-feed pumps, smokestacks and settings, 1 90 K. W. single-phase A. C. generator, skeleton switchboard and instruments. Will sell all or any part. For prices and description address City Light and Water Plant, Coleman, Texas.

FLOUR AND CORN MILL

A FIRST-CLASS FLOUR AND CORN MILL for sale in middle Tennessee; mill three years old. Address No. 985, care Manufacturers Record.

FLOURING MILL

FOR SALE—150-barrel flouring mill, up-to-date machinery, buildings and shipping facilities, with very large and increasing home trade, situated in thrifty, growing town; \$7000 net profits since July, 1911; owner retiring on account of health. Price \$20,000. Chas. A. Ford, Front Royal, Va.

BASKET FACTORY

FOR SALE—A large basket factory; capacity 1000 to 1200 dozen per day; ready market for every basket; unlimited cheap timber; healthy location; big money-maker. Get particulars. J. W. Brazel, Birmingham, Ala.

Classified Opportunities

MANUFACTURING BUILDING

FOR LEASE OR SALE—A manufacturing building, two stories high, built of brick with concrete basement, 50x150 feet, with lot 120x500 feet; well located in the city of Harrisburg, Pa., adjoining the main line of the Reading Railway, with street cars passing property; abundance labor both sexes from Harrisburg and Steelton; blueprint of building upon application to Victor M. Weaver, 222 Market St., Harrisburg, Pa.

SAW AND PLANING MILL

FOR SALE—Complete saw and planing mill; capacity of sawmill, 25 M. feet daily; planing mill, 40 M. feet daily; all in running order. Address P. O. Box 762, New Berne, N. C.

VARIETY WORKS, SASH AND DOOR FACTORY
I DESIRE TO SELL my variety works, door and sash factory—my entire business; unable to continue business on account of infirmity. It is a fine opening for an active man with capital. T. F. Cordray, Blakely, Ga.

LAND WANTED

WANTED—Tracts of land suitable for plating into town lots; must be desirable location and attractive; cities of 5000 or under preferred; correspondence solicited. The American Land Co., Evansville, Ind.

MINERAL AND TIMBER LANDS, WATER POWERS AND MISCELLANEOUS PROPERTIES

RELIABLE, accurate and definite information regarding the possibilities for investment in high-grade land propositions in Mississippi and Louisiana; fourteen years' successful operation; references exchanged. Walter G. Hodges, Meridian, Miss.

BEFORE YOU BUY LAND or make an investment in the South or Southwest send for a copy of my "Investor and Land Buyer" with list of splendid properties for sale; free on application. Jo A. Parker, Parma, Mo.

FOR SALE—2000 acres of good land and water on Flint River, all in a body; well timbered; five miles from railroad. Also a nice seven-room dwelling and store at Pleasant Hill. J. C. Pye, Woodland, Ga.

SAN ANTONIO—400 acres, partly within the city limits; very high and slightly; close to street car, and ripe for development; the best speculative buy in S. W. Texas. With two new railroads opening headquarters here a tremendous impetus has been given business in this section. Owner must sell. Price, \$500 per acre; \$50 below market. Rhodius & McAllister, Exclusive Agents, 418 Navarro St., San Antonio, Texas.

THIRTY THOUSAND ACRES AGRICULTURAL LANDS, Texas, \$1.10. Twenty thousand acres cut-over land, on railroad, Wakulla county, Florida, \$4 acre. Finest cornland property in America, \$75,000. Five thousand acres coal lands, Alabama, \$12. Power & Brooks, Montgomery, Alabama.

BUY A LOT in College Heights, close to the \$400,000 Rice Institute. Tuition free to all residents of Texas. We give you a guaranteed bond against loss. Prices low. Terms easy. Send for free descriptive booklet. College Heights Co., 508-9 Paul Bldg., Houston, Texas.

PHOSPHATE—We have listed four excellent phosphate properties, two hard rock and two pebble. These have been thoroughly prospected and analyzed by prominent engineering chemists. Locations are for out-right sale and can be delivered. Our best pebble proposition is in our hands for a short time only. If interested, advise quick. Marcus E. Sperry & Co., Tampa, Florida.

FOR SALE—1500 acres, including 400 acres muck land 8 feet deep, analysing 4.01 per cent. ammonia, and 90 acres clay land suitable for manufacture of Portland cement, near navigable stream, Ocklawaha River. R. L. Martin, Ocala, Fla.

FARMS, FACTORY SITES, TIMBER—With a very much larger list to select from than our competitors, with over 27 years' experience in this business, and having farmed for nearly 40 years near Norfolk, the senior member of this firm is capable of properly advising all farm seekers as to the best lands, best locations, and land most suited for special crops, or for general farming, and all we ask is that you consult our list before buying. H. C. Hogard & Co., Norfolk, Va.

OPPORTUNITY for investment in the National Capital, right in the pathway of the city's greatest growth along Fourteenth and Sixteenth streets, and fronting on the National Rock Creek Park containing 1000 acres. Property in this section is rapidly increasing in value. Present prices offer good investment. Easy terms, if desired. Robert E. Heater, 411-413 Colorado Building, Washington, D. C.

640 ACRES in Warr county at \$5 per acre. 40 acres in Reeves county, all tillable, at \$12.50 per acre. 181½ acres virgin pine land, all level, 8 miles from shipping station, fine farming country, 97 cents due State in 35 years, 10 bonus. Ranches, farms, timber lands in all parts of the State. Correspondence solicited. J. M. Dunn, Austin, Tex.

MARBLE LEASE

TWENTY-YEAR MARBLE LEASE embracing five colors of beautiful Tennessee stone and covering ten acres of land for sale. Address N. E. Logan, Knoxville, Tenn.

COAL LAND FOR SALE

COAL—14,000 acres of the choicest coal lands in West Virginia. R. B. Chaffin & Co., Inc., Richmond, Va.

CUT-OVER LANDS

CUT-OVER TIMBER TRACTS.
50,000 acres cut-over pine lands, Miss. \$6.50
30,000 acres cut-over pine lands, La. 6.00
75,000 acres cut-over pine lands, Tex. 5.00
18,000 acres cut-over hardwoods, La. 4.50
Marsh Lands for Reclamation.
60,000 acres in a body, Gulf Coast of La. 3.00
Timber Lands.
20,000 acres L. L. Y. pine, Fla., cut 3500 ft. 7.00
15,000 acres L. L. Y. pine, Ala., cut 7000 ft. 21.00
30,000 acres hardwood, cut 10,000 ft. (60% red gum) 10.00
Finest red gum proposition South.
Wm. R. Taylor, 508 Perrin Bldg., New Orleans, La.

TIMBER LAND FOR SALE

1500 ACRES and 600-acre tract of virgin timbered land; cut 7000 feet per acre. Price \$15 per acre. Write me for farms, cut-over, timber and colonization propositions. W. B. Lane, Hope, Ark.

FOR SALE—Six thousand acres choice hardwood timber on Oconee River, three miles from railroad, in Central Georgia; terms reasonable. Address Land Trust Company, 516-517 Grant Building, Atlanta, Ga.

WANTED—To sell one tract of timber within half mile of station on Southern Railway; can cut 2250 M. feet pine and 250 M. hardwood; can be shipped on a 4½-cent freight rate basis to Norfolk. Also one tract located on Virginian Railway; same rate of freight to Norfolk; nearly all pine and will cut about two million feet; railroad runs through piece of timber. Apply to V. D. Thorp, Newsoms, Va.

NOTICE—To buyers of timber or cut-over lands. We have just completed a thorough canvass of Arkansas, Mississippi and Louisiana and have contracted for the best only. Our prices are down right, and we can give you prompt service. King Real Estate Co., Byrd Bldg., Memphis, Tenn.

85 ACRES, adjoining railroad, near Richmond, Va., all in good second-growth timber. The saw timber and cord wood alone worth enough to almost pay for the place and get the land nearly free; watered by two branches; \$2000. Green & Redd, 30 North 9th street, Richmond, Va.

FOR SALE—32,000 acres hardwood timber land, through which runs the Navasota River, in between two railroads, and in two east Texas counties; over 3000 acres bottom, with ash, elm and oak; balance red, black, post oak and some hickory; no better agricultural land. Price \$5 per acre. D. E. Hirschfeld, Waco, Texas.

TIMBER AND MILL PROPOSITION—Selected from our list we offer about 30,000,000 feet of good grade timber on railroad in North Carolina; 75 per cent. short leaf, 20 per cent. long leaf; about 8000 acres; one-half in fee; only small acreage cut over; competent cruiser makes favorable report; important to sell at once. Apply for detailed information. Price \$75,000, including a complete mill. H. W. Hilleary & Company, 729-30 Southern Building, Washington, D. C.

FOLLOWING round timber in Florida.
15,500 acres, De Soto county, at \$7.50 per acre; fee simple; warranty deed; third cash; balance one, two years at 6 per cent.
50,000 acres, Osceola county, at \$10.50 per acre; fee simple; warranty deed; \$100,000 cash; balance easy terms at 6 per cent.
Numerous other offerings. Write us. Marcus E. Sperry & Co., Tampa, Fla.

293,000 ACRES OF LONG-LEAF YELLOW PINE—This tract is located in Manatee county, Florida, and contains 293,000 acres of all round L. L. Y. pine, guaranteed to cut 675,000,000 feet of good merchantable lumber. It is the largest body of all round timber that is standing in the entire South, and as a turpentine proposition it is the largest and best that is in the entire South. After counting the value of the turpentine and rosin and counting the land at only, say, \$5 per acre, this timber will not stand over 76 cents per thousand, stumpage.

It is exceptionally well located for cheap transportation. It lies on both sides of Sarasota Bay, which is navigable to the Gulf; also railroad facilities from the tract. It lies about fifty miles south of Tampa. Price, \$10 per acre in fee. West Virginia Tri-Products Company, Howard L. Swisher, President, Morgantown, West Virginia.

FOR SALE—Cut-over pine land, 1000 to 20,000 acres, also timbered pine and hardwoods; only principals. B. I. Hazard, No. 430 Front St., Georgetown, S. C.

TIMBER FOR SALE

FOR SALE—40,000,000 feet of first-class hardwood and cypress, situated right on a railroad. Apply to E. J. Iles, Alexandria, La.

FOR SALE—7,000,000 feet high-grade saw timber, half original, sliding on property, 75 miles Richmond; \$4 thousand. Eggleston & Mann, Amelia, Va.

FARM AND TIMBER LANDS

FOR SALE NOTICE—500 acres swamp land, all well timbered; fine farming land; produce cotton, corn or any kind of grain; on public road 2½ miles from town and railroad. Dr. B. F. George, Parkdale, Ark.

WRITE THOMAS H. JONES for alfalfa and cotton lands; also timber lands. Greensboro, Hale county, Alabama.

FARM AND TIMBER LANDS—We have attractive offerings in farm, yellow pine and hardwood timber lands. We also handle coal and ore properties. Correspondence from interested parties invited. Provident Trust & Security Co., Land Dept., Walton Bldg., Atlanta, Ga.

FOR SALE—4500 acres good timber, farming and fruit lands near Gulf, Ala., on Frisco, 87 miles west Birmingham; county high school; pike road; fine water; 500 to 800 feet above sea; good healthy climate; no whiskey; no negroes; \$10 to \$40 per acre; cash and terms. J. M. Allman, Owner, Gulf, Ala.

I HAVE BARGAINS in TIMBER TRACTS, large colonization propositions, cut-over lands and reclamation tracts in any size wanted up to 150,000 acres from \$2.50 per acre up.

Wm. R. Taylor, Land and Timber Investments, 508 Perrin Building, New Orleans, La. Established 1898. Sales over \$6,000,000.

COLO NIZATION LANDS

BALDWIN COUNTY AND MOBILE COUNTY, ALABAMA, CUT-OVER LANDS. Large and small tracts, near Mobile Bay, in most desirable and rapidly developing sections. If looking for tract for colonization, or investment offering safe, quick and profitable returns, don't fail to write for prices and liberal terms. Opening of Panama Canal will greatly increase the value of these lands. Robert Berney, 915 Van Antwerp Building, Mobile, Ala.

FARMING LANDS

FOR SALE—Farms from the mountains to the ocean; fruit, poultry, grain, stock, etc.; catalogues free. Geo. E. Crawford & Co., Richmond, Va.

FARM, FRUIT AND TRUCK LANDS

ALABAMA

FOR SALE—10 acres; 6-room house; red land; fine orchard; good water; close to church and school; fine for trucking; two miles of Birmingham, Ala., city limits; fine roads; \$3500; good terms; cabinet mantles; cement milkhouse. S. V. Blythe, Danville, Ala.

C. C. MECHEM, Bank of Mobile Building, Mobile, Ala., makes a specialty of handling small tracts of land on easy terms. He guarantees his titles in the Title Insurance Co. of Mobile, Alabama, charges no interest on deferred payments and pays all taxes until deed is delivered. Call and see him.

ALABAMA ALFALFA LAND—Rich prairie soil; available lime, needs no inoculation; produces three to five tons per acre annually without fertilizer; ideal climate; price wonderfully low; best investment opportunities in United States; Panama Canal; hundreds of other reasons; purchase now; a hearty welcome to homeseekers. Write us. Alabama State Agricultural Land Co., Center, Ala.

FLORIDA

FLORIDA FARMS ARE FORTUNES—Our soil similar to fertile sections Iowa, Missouri; easy-payment plan. Write for booklet. Milton Land & Investment Co., Marianna, Fla.

FOR SALE—Bargain; 3000 acres selected orange and grapefruit land in a body, Lake region of Polk county; best citrus section of Florida; heavy round timber; very high land; sold only as a whole. Address "Owner," P. O. Box 242, Tampa, Fla.

FLORIDA FRUIT AND TRUCK LANDS—We offer 10-acre tracts in that part of the State of Florida lying in Hillsboro county and Lake Butler region, in the Pinellas peninsula, on the west coast of Florida, on the Gulf of Mexico; with its elevation and rolling hills is especially suited for fruits of all kinds—grapefruit, oranges, grapes, dates, figs, bananas, peaches and other fruits, as well as vegetables, potatoes, corn, beans, peanuts and all the varieties that can be produced anywhere. The Tarpon Springs district offers the most favorable conditions for farmer, home seeker and investor. Fertile land in small tracts, easy monthly payments; guaranteed title. Investigation invited. If you want a bargain and a home in the most desirable part of Florida, write now for particulars and reservation. Tampa & Tarpon Springs Land Co., Tampa, Florida.

LOUISIANA

HEADQUARTERS FOR NORTH LOUISIANA LANDS—Large and small tracts, suitable for plantations, small farms, orchards or truck gardens. Climate, soil and health conditions here are unsurpassed. The staple crops of the North grow in this section alongside of cotton and cane. A great stock country. Write for particulars stating your requirements. References, my customers and any bank in Shreveport. W. A. Jones, Authority on North Louisiana Lands, Shreveport, La.

FORTY-ACRE TRUCK FARMS for sale in the famous strawberry belt of Louisiana; on main line of Illinois Central Railroad. Price \$25 per acre on easy terms. Similar lands only a few miles distant are selling as high as \$75 per acre. The Lampton Realty Co., 405 Hibernia Bank Building, New Orleans, Louisiana.

MISSOURI

FOR SALE—Small farms in the strawberry belt of Newton county, Missouri. Address B. F. Mahorney, Racine, Mo.

MISSISSIPPI

FORTY-ACRE FARMS in George county, Mississippi, 35 miles northwest of Mobile. This is one of the most-favored general farming sections of the entire South, and no better values can be found anywhere. Price \$25 per acre on easy terms. The Lampton Realty Co., 405 Hibernia Bank Building, New Orleans, Louisiana.

NOTICE—To buyers of timber or cut-over lands. We have just completed a thorough canvass of Arkansas, Mississippi and Louisiana and have contracted for the best only. Our prices are down right, and we can give you prompt service. King Real Estate Co., Byrd Bldg., Memphis, Tenn.

NEW MEXICO

FOR SALE—160 acres; house, well, pump; 40 acres cultivated; also 320 acres; lease; 400; a fine grass pasture; fine place for stock man; \$3000. A. L. Grimstead, Moriarty, N. M.

FOR TRADE—60 acres at Clayton, N. M., one-quarter mile of courthouse; will consider small farm in Central Texas or will sell at \$50 per acre. W. B. Cowan, Bluffdale, Tex.

NORTH CAROLINA

FOR SALE—570-acre farm; only \$15 per acre if taken at once; some improvements; lays well; R. F. D.; school near; worth investigating. Leighton, Aulander, N. C.

FOR SALE—Between Salisbury and Lexington, 300-acre farm on line of Southern Railroad, 1 mile from Linwood, N. C., ¼ mile from Holtsburg flag station; red clay land; timbered and watered. For particulars address Wm. B. Meares, Linwood, N. C.

OKLAHOMA

160 ACRES, 65 in cultivation, a small orchard, 40 acres in pasture, 12 acres prairie; two houses; \$3000. A. snap. Richard Beatty, Wellston, Okla., R. No. 4, Box 23.

TEXAS

THE FRIO VALLEY WINTER GARDENS, La Salle county, Southwest Texas, a colony of 100,000 acres level rich black sandy loam in famous artesian belt; grow oranges, figs, Bermuda onions. We are opening Fowlerton, a new town on new railroad in heart of the colony. Guaranteed improvements on townsite. A 10-acre farm and free residence lot on terms of \$15 cash; balance 10 monthly. Write for booklet A, prices, plans, etc. Fowler Brothers Land Co., Frost Building, San Antonio, Texas.

THE BLACK LANDS OF NORTH TEXAS are justly famous as the best in the world for the production of cotton, corn, wheat and oats—not one crop, but four. Once Goodwin's Denton Creek Subdivision consists of more than 8000 acres of this land, situated on the Denton and Wise county line, 60 miles northwest of Dallas, and is offered at reasonable prices—thirty to forty dollars per acre—and upon such terms that any man with a few hundred dollars cash can easily meet. The gradual and steady enhancement in value of such land should appeal to investors, while the very easy terms upon which it is offered should appeal to the farmer without a home. Address Fount Ray, Decatur, Texas.

SOUTH TEXAS LAND—We deal in bargains in South Texas land, wholesale or retail; 10 acres or more garden, orange and berry land on easy monthly payments. Send for our illustrated literature. We also have large and small improved farms and ranches.
10,000 acres, Texas ranch, at \$1.35 per acre.
50,000 acres, 60 per cent. tillable, at \$3 per acre.
30,000 acres, with fine improvements, at \$3 per acre.
20,000 acres, all agricultural, at \$6 per acre.
25,000 acres, prairie, Chambers county, at \$16 per acre.
Write, stating what you want. L. Bryan & Co., Houston, Texas.

2464-ACRE FARM on Lavaca River, 5 miles north of Edna, Texas; 500 acres river bottom field; 10 small rent houses; one 10-room ranch house; private phone line out of Edna; all fenced; several wells; 3000 bearing pecan trees; will sell or trade for good city property at \$35 per acre. Emil Locke, 712 Gibbs Bldg., San Antonio, Texas.

Classified Opportunities

[CONTINUED FROM PAGES 94 AND 95.]

10,000 ACRES Nueces River bottom land; all subdivided into small tracts; very best truck and fruit land in Southwest Texas; will sell in small tracts or in a body. Emil Locke, 712 Gibbs Bldg., San Antonio, Texas.

BLACK LAND of unexcelled fertility in Hays and Travis counties, \$20 to \$200 per acre. Cheap ranches and Buda town lots. Send for our list and be convinced. J. E. Watkins, Buda, Texas.

VIRGINIA

MODEL MODERN FARM of about 118 acres, of which 106 acres are cleared and have been for four years under scientific development; located in Green Mountain section of Albemarle, two miles from Warren Station, on C. & O. Ry.; modern 6-room residence, with bathroom, furnace, etc.; full equipment of outbuildings, all built two years ago. An ideal country home combined with a good farm of moderate size. Address "Owner," care Postmaster, Warren P. O., Va.

100-ACRE TRUCK AND DAIRY FARM for sale or rent with landing on Western Branch, with or without good dairy, teams, complete set of implements. H. A. Shutt, Portsmouth, Va., R. F. D. No. 2.

IDEAL FARM, 196 acres, near station; well watered and timbered; 8-room house; large barn; plenty fruit; splendid neighborhood; \$9000. Lafayette Mann, Amelia, Va.

MACHINERY AND SUPPLIES

FOR SALE—Complete line of chair machinery and fixtures to equip a chair factory for the manufacture of box-seat and round-post chairs, with a capacity of 600 chairs per day. One band saw, saw grinder, setting and brazing machines, all used thirty days. American machine No. 502. Gray Bros., China Grove, N. C.

FINANCIAL

OPPORTUNITY for investment in the National Capital, right in the pathway of the city's greatest growth along Fourteenth and Sixteenth streets, and fronting on the National Rock Creek Park containing 1600 acres.

Property in this section is rapidly increasing in value. Present prices offer good investment. Easy terms, if desired. Robert E. Heater, 411-413 Colorado Building, Washington, D. C.

MORTGAGE LOANS, carefully selected, on good cotton and corn farms in Southern Oklahoma; 5-year, 8%, \$250 to \$2500, to suit investors. This country's population, 25,000; assessed values, \$10,000,000; one of largest cotton producers. Can place your money very safely; 25 years' experience; 10 years bank cashier here; intimately acquainted with lands, people, conditions; abundant references; circular. Write J. G. James, Roff, Okla.

PATENT ATTORNEYS

EUGENE C. BROWN, ENGINEER and Patent Lawyer, Suite 40 Victor Building, Washington, D. C. Member Bar U. S. Supreme Court. Patents and Trademarks. Inventions are considered both from Engineering and Legal standpoints in my prosecution of patents. An experience of over 9 years as Examiner in U. S. Patent Office and over 6 years as Patent Expert in important patent suits are my special qualifications. Reports upon validity and infringement. Send sketch of invention for advice.

PATENT YOUR IDEAS—\$100.00 offered for one invention, \$3500 for another; book, "How to Obtain a Patent" and "What to Invent," sent free; send rough sketch for free report as to patentability; patent obtained or fee returned. We advertise your patent for sale at our expense. Chandler & Chandler, patent attorneys, 978 F street, Washington, D. C.

PATENTS Secured or Fee Returned. Send sketch for free report as to patentability. Guide book and what to invent, with valuable list of inventions wanted, sent free; \$1,000,000 offered for one invention; \$14,000 for others. Patents secured by us advertised free in World's Progress; sample free. Victor J. Evans & Co., Washington, D. C.

PATENTS FOR SALE

WE HAVE recently secured the following patents. Address all communications to Sales Dept., Victor J. Evans & Co., Washington, D. C.: Beverly M. Robinson, measuring device; L. Wormworth, self-wrangling mop; Louis E. Tichenor and Samuel E. McNulty, vehicle spoke; Fred T. Thurber, overhead electric railroad; Frank W. Taylor, mail box; J. C. McGowan and R. W. Michler, auto, indicator; James L. Michaels, bridge; C. V. V. Turner, rail joint; J. S. Brorby, street flushing machine; Leo M. Hennessey, oil burner; Geo. L. Hommedieu, picture-frame support; Wm. McColgan, reamer; Ludwick Larson, door; A. A. Le Deyen, grate; Wm. J. Payne, hatpin guard; Chas. E. Barrie, corn husker; Chas. S. Swain, bicycle support; G. Van Daam, pin cushion; Harry Roberts, hatpin device; A. O. Girard, stove; John T. Walston, churn-operating device; Leslie D. McPherson, pump-rod coupler; J. E. Stephenson, washboard; Lawrence E. Strong, corn husker; G. W. Swisher, lath; M. M. Kinney, hand loom.

PROPOSALS

PUBLIC BUILDINGS.

CONSTRUCTION BONDS

MISCELLANEOUS.

GOVERNMENT PROPOSALS

PROPOSALS FOR THE PURCHASE OF Steel Back, Side, and Culvert Forms, offered for sale by the Isthmian Canal Commission, which are no longer needed. Sealed proposals will be received at the office of the General Purchasing Officer, Isthmian Canal Commission, Washington, D. C., until 10:30 A. M. May 8, 1912, at which time they will be opened in public, for the purchase of the above-mentioned articles. Blanks and general information relating to this Circular (No. 690) may be obtained from this office or the office of the Assistant Purchasing Agents, 24 State Street, New York City; 614 Whitney-Central Building, New Orleans, La.; and 1086 North Point Street, San Francisco, Ca.; also from the U. S. Engineer Offices in the following cities: Seattle, Wash.; Los Angeles, Cal.; Baltimore, Md.; Philadelphia, Pa.; Pittsburgh, Pa.; Boston, Mass.; Buffalo, N. Y.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; St. Louis, Mo.; Detroit, Mich.; Milwaukee, Wis.; St. Paul, Minn.; Chattanooga, Tenn.; Louisville, Ky.; Mobile, Ala.; and Galveston, Tex.; Commercial Club, Kansas City, Mo.; Chamber of Commerce, Quincy, Ill.; and Commercial Club, Tacoma, Wash. F. C. BOGGS, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

PROPOSALS FOR BOAT SPIKES, POLTRY Netting, Portable Forges, Paint Brushes, Seythes, Mess-kits, Spoons, Asbestos Packing, Rubber Belting, Wool Waste, Magnesia Pipe Covering, Railway Flags, Coal Tar, Beeswax, Calcium Carbide, Asbestos Cement, Muriatic Acid, Linseed Oil, Library Paste, Scratch Pads, and Yellow-pine Lumber. Sealed proposals will be received at the office of the General Purchasing Officer, Isthmian Canal Commission, Washington, D. C., until 10:30 A. M. April 15, 1912, at which time they will be opened in public, for furnishing the above-mentioned articles. Blanks and general information relating to this Circular (No. 689) may be obtained from this office or the office of the Assistant Purchasing Agents, 24 State Street, New York City, and 614 Whitney-Central Building, New Orleans, La.; also from the U. S. Engineer Offices in the following cities: Baltimore, Md.; Philadelphia, Pa.; Pittsburgh, Pa.; Boston, Mass.; Buffalo, N. Y.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; St. Louis, Mo.; Detroit, Mich.; Milwaukee, Wis.; St. Paul, Minn.; Chattanooga, Tenn.; Louisville, Ky.; Mobile, Ala.; and Galveston, Tex.; Commercial Club, Kansas City, Mo.; Chamber of Commerce, Quincy, Ill.; F. C. BOGGS, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., March 26, 1912. Sealed proposals will be received at this office until 3 o'clock P. M. on the 2d day of May, 1912, and then opened, for the construction, complete (including plumbing, gaspiping, heating apparatus, electric conduits and wiring, and interior lighting fixtures), of the United States Postoffice at Crowley, La. The building is to be of one story and mezzanine and has a ground area of approximately 5100 square feet; fireproof first floor; stone facing, and tile and copper roof. Drawings and specifications may be obtained from the custodian of site at Crowley, La., or at this office, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.

PROPOSALS FOR MATERIAL FOR STEEL, Cylinders, Rivets, Steel Reinforcement Bars, Babbitt Metal, Bolster Truck Springs, Pipe Wrenches, Cable Hangers, Fire Hose, Heating Boilers, Hot-water Service Heaters, Sanitary Fixtures, Cast-iron Pipe and Fittings, Steel Pipe and Fittings, Brass Pipe and Fittings, Lead Bends and P Traps, Valves, Cocks, Lumber, Untreated Piles, and Artificial Vermilion. Sealed proposals will be received at the office of the General Purchasing Officer, Isthmian Canal Commission, Washington, D. C., until 10:30 A. M. April 27, 1912, at which time they will be opened in public, for furnishing the above-mentioned articles. Blanks and general information relating to this Circular (No. 698) may be obtained from this office or the office of the Assistant Purchasing Agents, 24 State Street, New York City; 614 Whitney-Central Building, New Orleans, La.; and 1086 North Point Street, San Francisco, Cal.; also from the U. S. Engineer Offices in the following cities: Seattle, Wash.; Los Angeles, Cal.; Baltimore, Md.; Philadelphia, Pa.; Pittsburgh, Pa.; Boston, Mass.; Buffalo, N. Y.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; St. Louis, Mo.; Detroit, Mich.; Milwaukee, Wis.; St. Paul, Minn.; Chattanooga, Tenn.; Louisville, Ky.; Mobile, Ala.; and Galveston, Tex.; Commercial Club, Kansas City, Mo.; Chamber of Commerce, Quincy, Ill.; and Commercial Club, Tacoma, Wash. F. C. BOGGS, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

PROPOSALS FOR CHAIN, JOURNAL Bearings, Galvanized Steel, Sheet Zinc, Sheet Copper, Gaskets, Solder, Steel Washers, Vitreous Enamel Pipe, Lead Pipe, Brass Tubing, Pipe Fittings, Valves, Cocks, Grease Cups, Wrenches, Machetes, Hammers, Tool Handles, Corn Brooms, Hinges, Files, Paint Brushes, Galvanized Buckets, Water Coolers, Lantern Globes, Life Preservers, Hose, Packing, Leather Washers, Wool Waste, Emery Cloth, Railway Flags, Bunting, Chamois Skins, Sponges, Tag Board, Lime, Gasoline, Linseed Oil, Red Lead, Venetian Red, Yellow Ochre, and Ivory Black. Sealed proposals will be received at the office of the General Purchasing Officer, Isthmian Canal Commission, Washington, D. C., until 10:30 A. M. April 10, 1912, at which time they will be opened in public, for furnishing the above-mentioned articles. Blanks and general information relating to this Circular (No. 697) may be obtained from this office or the office of the Assistant Purchasing Agents, 24 State Street, New York City, and 614 Whitney-Central Building, New Orleans, La.; also from the U. S. Engineer Offices in the following cities: Baltimore, Md.; Philadelphia, Pa.; Pittsburgh, Pa.; Boston, Mass.; Buffalo, N. Y.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; St. Louis, Mo.; Detroit, Mich.; Milwaukee, Wis.; St. Paul, Minn.; Chattanooga, Tenn.; Louisville, Ky.; Mobile, Ala.; and Galveston, Tex.; Commercial Club, Kansas City, Mo.; Chamber of Commerce, Quincy, Ill.; F. C. BOGGS, Major, Corps of Engineers, U. S. A., General Purchasing Officer.

GOVERNORS ISLAND, N. Y. H. April 1, 1912. Sealed proposals, in triplicate, for furnishing Fuel, Gasoline, Mineral Oil, and Forage and Straw (three months' and a year's supply) required in Eastern Division, during year commencing July 1, 1912, will be received here until 10 A. M. May 1, 1912. Information furnished on application. J. B. BELLINGER, C. Q. M.

DEPARTMENT OF THE INTERIOR, Washington, D. C., March 21, 1912. Sealed proposals, in duplicate, will be received at the Department until two o'clock P. M. Tuesday, April 30, 1912, for the erection and completion of a frame dwelling on the south side of Hot Springs Mountain Reservation, Hot Springs, Arkansas, in accordance with drawings and specifications to be had on application to this Department. Bidders are invited to attend. One set of plans and specifications will be found in the office of the Superintendent of the Hot Springs Reservation at Hot Springs, Arkansas, where they may be inspected by interested parties. Applicants for plans and specifications will be required to submit with their applications for same a certified check for \$25, payable to the Secretary of the Interior, as a guarantee for the return of the plans in good condition. The right is reserved to reject any or all bids, waive technical defects, and accept one part and reject the other, as the interests of the Government may require. Proposals must be marked "Proposals for frame dwelling, Hot Springs, Arkansas," be securely enveloped, and addressed to the Secretary of the Interior, Washington, D. C. CARMEL A. THOMPSON, Assistant Secretary.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., March 23, 1912. Sealed proposals will be received at this office until 3 o'clock P. M. on the 4th day of May, 1912, and then opened, for the construction, complete (including plumbing, gaspiping, heating apparatus, electric conduits and wiring, and interior lighting fixtures), of the United States Postoffice at Hillsboro, Tex. The building is to be approximately 4350 square feet in ground area; one story and mezzanine, faced with stone and granite to first floor with brick above, terra-cotta trimming and tile roof; the first floor only is of fireproof construction. Drawings and specifications may be obtained from the custodian of site at Hillsboro, Tex., or at this office, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., March 25, 1912. Sealed proposals will be received at this office until 3 o'clock P. M. on the 1st day of May, 1912, and then opened, for the installation of a vacuum cleaning system in the United States postoffice at Oklahoma City, Okla., in accordance with drawing and specification, copies of which may be had at this office or at the office of the superintendent, Oklahoma City, Okla., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.

U. S. ENGINEER OFFICE, Mobile, Ala., March 22, 1912. Sealed proposals for construction of the 30-foot twin-screw motor survey boat Dauphin will be received at this office until 11 A. M. April 22, 1912, and then publicly opened. Information on application. C. A. F. FLAGLER, Major, Engrs.

NEW BOND OFFERINGS

Bonds For Sale

Notice is hereby given that the Mayor and Council of the city of Douglas, Georgia, will on the 15th day of April, 1912, at twelve o'clock noon of said day, in the Council Chamber of said city, receive sealed propos-

als for and sell to the highest bidder all of the following bonds of said city: School Bonds to the amount of \$25,000.00; Electric-light and Water Bonds to the amount of \$15,000.00; Sewerage Bonds to the amount of \$10,000.00. All of said bonds being in denominations of \$500.00 each, bearing interest at the rate of 5 per cent. per annum, payable annually. The said bonds to be dated February 1, 1912. Said bonds to mature 30 years from the date of issue, sinking fund being provided for to pay off said bonds in full at the end of said period.

A certified check for \$1000.00 must accompany each bid as a guarantee of the good faith of the bidder.

The right is reserved to reject any and all bids.

Proposals to be made in sealed envelopes addressed to J. D. Knowles, Douglas, Coffee county, Georgia, City Clerk, and marked on outside "Proposals for City Bonds." All inquiries to be addressed to J. D. Knowles, City Clerk, Douglas, Coffee county, Georgia.

Town of Colonial Beach (Va.) \$37,000.00 6% 25-Year Coupon Bonds For Sale.

\$20,000 for sewers and \$17,000 for waterworks; coupon; 6 per cent., payable semi-annually; interest to be paid at such place or places as shall be agreed upon between Town Council and purchaser.

Denomination of \$500.

Certified check \$500 must accompany the bid.

Right to reject any and all bids is reserved.

Date of opening bids, April 11, 1912, 3 o'clock P. M.

By order of the Town Council, March 14, 1912.

H. W. B. WILLIAMS, Mayor.

\$20,000 5% School Bonds

Norfolk, Va., March 22, 1912. The School Board of Washington Magistrate District No. 5 of the County of Norfolk will receive bids at the office of the County Clerk of Norfolk County, Portsmouth, Va., until the 9th day of April, 1912, at twelve o'clock, for the purchase of an issue of \$20,000 School Bonds, bearing interest at the rate of five per cent., payable semi-annually, said bonds being payable twenty years after date, and issued by authority of an act of the General Assembly approved February 15, 1912.

T. W. BUTT, Clerk of Washington District School Board No. 5.

Kershaw County Bonds For Sale

Proposals are invited from purchasers for ninety-five thousand dollars (\$95,000) of non-taxable coupon bonds to be issued by Kershaw county, bearing date May 1, 1912, payable twenty years from date, interest at five per cent. (5%), payable semi-annually. Purpose of issue to refund maturing railroad bonds. Bids to be opened 12 M. Wednesday, April 24, 1912. No bid for less than par and accrued interest will be accepted. Certified check for one thousand dollars (\$1000) must be filed by each bidder. Right reserved to reject any and all bids. Address M. C. WEST, County Supervisor, Camden, S. C. March 19, 1912.

PROPOSALS

PUBLIC BUILDINGS.

CONSTRUCTION BONDS

MISCELLANEOUS.

NEW BOND OFFERINGS

\$35,000 6% Water-Works Bonds

Idabel, Okla.
Sealed bids addressed to H. S. McLean, Town Clerk, will be received until 8 P. M. April 16, 1912, for the sale of \$35,000 25-year 6 per cent. semi-annual interest Water-works Improvement and Extension Bonds of Idabel, McCurtain county, Oklahoma, dated April 15, 1912. Bonds delivered free for payment of purchase price at the First National Bank of Idabel, Okla., within five (5) days after approval by the Attorney-General of Oklahoma and accompanied with transcript of proceedings upon which his approval is based.
Certified check for \$500, payable to the Town Treasurer of Idabel, Okla., to secure the performance must accompany each bid. Usual rights reserved.

\$150,000 Municipal Bonds

Sealed bids will be received by the Board of Bond Trustees of the City of Lakeland, Fla., until April 15, 1912, for \$150,000 of sewerage, street-paving and public-building bonds, dated March 1, 1912, and payable thirty to forty-four years thereafter, numbered from 1 to 100, of \$1000 each, ten of which shall be due and payable thirty years from date of issue, and ten each year thereafter until all are paid, bearing interest at the rate of 5 per cent. per annum, interest payable semi-annually on March 1 and September 1 of each year. The Board reserves the right to reject any and all bids. Each proposal or bid shall be accompanied by a certified check of \$1000, payable to the Board of Bond Trustees. These bonds have been validated under the rulings of the Circuit Court of the Tenth Judicial Circuit of Florida in compliance with Chapter 827, No. 118, Acts Legislature of 1911. Address all bids to C. G. MEMMINGER, Chairman Board Bond Trustees.

\$101,600 5% School Bonds

Norfolk Va., March 22, 1912.
The School Board of Western Branch Magisterial District No. 1 of the County of Norfolk will receive bids at the office of the County Clerk of Norfolk County, Portsmouth, Va., until the 9th day of April, 1912, at twelve o'clock, for the purchase of an issue of \$101,600 School Bonds, bearing interest at the rate of five per cent., payable semi-annually, said bonds being payable twenty years after date, and issued by authority of an act of the General Assembly approved February 14, 1912.

\$81,600 of this amount is for the purpose of refunding bonds issued at various times by the said School Board of the Western Branch Magisterial District No. 1 of the County of Norfolk, and remaining \$20,000 for the purpose of school improvements in said district.

W. T. PARKER,
Clerk of Western Branch
School Board No. 1.

PAVING

Paving

FORT SMITH, ARKANSAS.
GARRISON AVENUE.

Bids will be received until noon May 1, 1912, at the office of Board of Improvements Paving District No. 7, No. 94 North 6th street, in the City of Fort Smith, Arkansas. Specifications may be had on application to the City Engineer, City Hall.

Grading, Culvert Work and Graveling

McKenzie, Tenn.
Sealed proposals will be received by the Mayor and Board of Aldermen of the City of McKenzie, Tenn., until 3 P. M. April 24, at the Mayor's office, for the necessary grading, culvert work and graveling of certain streets in the city. For all necessary information address F. D. Walpole, Recorder, McKenzie, Tennessee; C. H. Jenks, Engineer, Union City, Tennessee.

Laying Macadam Streets on Part of Wenner Street, High Street and Potomac Avenue.

Brunswick, Md.
Sealed proposals will be received by the Mayor and Council of the town of Brunswick, Maryland, until 1:30 o'clock P. M. of the 10th day of April, A. D. 1912, for laying macadam; approximately 14,000 square yards of Tarvia or Texaco road asphalt filled macadam on part of Wenner street, High street and part of Potomac avenue, and the building of such amount of concrete curb as may be necessary.
Detailed plans, specifications and forms of proposals may be seen at the Mayor's office or by calling upon the Street Committee. Each bid must be accompanied by a certified check for two hundred dollars (\$200), drawn payable to the Mayor and Council.
The right to reject any or all bids is expressly reserved.

DR. A. G. HORINE,
Mayor.

L. S. GARDNER,
G. D. CATLETT,
J. H. MOLUR,
Street Committee.

Street Improvements, Roxboro, N. C.

Sealed proposals will be received by the Mayor and Commissioners of the Town of Roxboro, N. C., at the Town Hall, Roxboro, N. C., until 4 P. M. April 30th, 1912, for improving streets. The work will consist of about 31,000 square yards of bituminous macadam, 1500 square yards of concrete sidewalk, 4000 linear feet of combined curb and gutter, and 16,000 cubic yards of grading.
Plans, profiles and specifications will be on file at the Town Hall at Roxboro, N. C., and at the Engineer's office at Charlotte, N. C. No bid will be considered unless accompanied by a certified check for five hundred and no-100 (\$500) dollars. The right is reserved to reject any or all bids.

M. C. WINSTEAD, Mayor.
A. M. BURNS, Clerk.
Engineer:
GILBERT C. WHITE, Charlotte, N. C.

Paving

NOTICE TO CONTRACTORS.

Sweetwater, Texas.

Public notice is hereby given that bids will be received until the 22d day of April, 1912, for the construction of about 66,000 square yards of water-bound macadam street paving and 4000 square yards of asphalt macadam street paving in the City of Sweetwater, Texas, all bids to be submitted as follows:

A.—Each bidder must submit a price per square yard of water-bound macadam paving, a price per square yard of asphalt macadam paving and a price per cubic yard of grading.

B.—All bids shall be in accordance with the requirements of the specifications of the City Engineer.

C.—Specifications for such work may be obtained from A. O. Dreyer, City Engineer, Sweetwater, Texas.

D.—Each bid shall be accompanied by a certified check in the sum of \$500, payable to the Mayor of Sweetwater, Texas, as a guarantee to the city that such bidder will execute satisfactory bond, and that such work shall be begun within thirty days from the date of such award of contract.

E.—All bids shall be sealed, signed by bidder, mailed to L. S. Polk, City Secretary, Sweetwater, Texas, and be opened by the City Council at a meeting for such purpose, whereat each bidder, his agent or attorney, may be present, such meeting to be held at the City Hall, Sweetwater, Texas, on April 22, 1912, at 8 o'clock P. M.

Done by order of the City Council, Sweetwater, Texas, March 28, 1912.

L. S. POLK,

City Secretary.

Paving

NOTICE TO CONTRACTORS.

Lynchburg, Va.

Sealed proposals for the paving of certain streets in the western section of the City of Lynchburg, Va., will be received by the Council Committee on Streets and Sewers at the City Engineer's office, Lynchburg, Virginia, until 12 noon of Saturday, April 13, 1912, and on that day will be publicly opened and read. All bids must be made upon blank forms to be obtained at the office of the City Engineer, Lynchburg, Va. A surety bond will be required for the faithful performance of the contract, and a certified check shall accompany each bid. The principal items of work to be done are as follows:

30,000 cubic yards excavating;
21,400 linear feet concrete curb;
37,000 square yards bituminous macadam pavement.

Specifications and forms of proposals can be obtained at the office of the City Engineer, Lynchburg, Virginia. The committee reserves the right to reject any or all bids should they deem it to be for the interest of the City of Lynchburg, Va., to do so. For details of information and further particulars apply to

H. L. SHANER, City Engineer.

Street Paving Contract

Brunswick, Ga.

Sealed proposals will be received by the Mayor and Council of the City of Brunswick, Ga., until 8 P. M. Monday, April 15, 1912, for furnishing all material and labor and doing the work of grading and paving with vitrified brick Monk street from Newcastle west to Stone steps, Gloucester street from Union to Newcastle, F street from Newcastle to Bay, and Oglethorpe street from Monk to Gloucester, according to the plans and specifications on file in the office of the City Engineer and Director of Public Works, copies of which will be furnished on application. There will be approximately 11,000 square yards of paving and 1700 linear feet of granite curb. Terms of payment will be one-third to be paid on January 1, 1912, one-third to be paid on January 1, 1914, balance July 1, 1914, notes with interest at the rate of 6 per cent. per annum, the city reserving the right to take up all papers any time. Bids must be accompanied by a certified check of 10 per cent. of the bid, payable to W. B. Fain, City Treasurer, which will be returned to the unsuccessful bidders. The successful bidder will be required to execute a bond to the sum of 20 per cent. of his bid for the faithful performance of his contract. The Mayor and Council reserve the right to reject any and all bids.

J. L. ZACHRY,
City Engineer and Director of Public Works.

To Paving Contractors

Elberton, Georgia.
Sealed proposals on blank forms furnished by the city and addressed to "The Mayor and City Council," Elberton, Georgia, will be received until 8:30 o'clock P. M. April 9, 1912, for furnishing all material, equipment and labor for the following work:

25,000 square yards of Bituminous Macadam Street Paving.

5000 square yards of Concrete Gutters.

Each bid must be accompanied by a certified check for twenty-five hundred dollars (\$2500), made payable to the Mayor.

Right is reserved to reject any or all bids. Plans and specifications can be seen at the offices of the consulting engineers, or specifications may be obtained by writing them at Box No. 582, Savannah, Ga.

J. M. WESTER, Mayor.
W. F. JONES, City Clerk.

Consulting Engineers:

H. S. JAUDON ENGINEERING CO.,

Savannah, Ga.

City of Charlotte (N. C.) Paving

NOTICE TO CONTRACTORS.

Sealed proposals for the paving of certain streets in the City of Charlotte will be received by the Executive Board up to 8 o'clock P. M. on the 10th day of April, 1912. The work to be done consists of approximately 161,000 square yards of paving, 42,000 cubic yards of grading, 34,000 square yards of cement sidewalks, 50,000 feet new curbing, 20,000 feet old curbing reset and about nine miles of sewers and drains.

Bids will be received on bitulthic, sheet asphalt, bituminous macadam and double-bond pavement.

A certified check equal to 5 per cent. of the amount of the bid and made payable to the Treasurer of the City of Charlotte will be required to accompany each bid.

Plans may be seen and specifications obtained at the office of the City Engineer. The right is reserved to reject any or all bids or any part of a bid.

By order of the Executive Board.
A. H. WEARN,
City Clerk and Treasurer.
JOSEPH FIRTH,
City Engineer.

Street Paving

NOTICE TO CONTRACTORS.

Georgetown, Ky.

Notice is hereby given that the Board of Council of the City of Georgetown, Kentucky, will on the 19th day of April, 1912, at 7 o'clock P. M., at the Council Chamber in the City Building in said city, receive sealed bids for the construction of the streets hereinafter named, and the City Clerk of said Board of Council is authorized to receive sealed bids for said work up till the said day and hour for the construction of a pavement, curb and gutter upon the streets and parts of streets hereinafter named of the following modes of construction: Vitrified brick on concrete foundation; natural asphalt on concrete foundation; asphaltic concrete on concrete foundation.

The streets and parts of streets to be improved are as follows: Main street, from the city limits on the west to the west side of Warrendale avenue; Broadway street, from the north side of Main street to the north side of Court street; Court street, from the east side of Broadway street to the east side of Court alley; the street from the south side of Court street to the north side of Main street, lying just east of the Courthouse and just east of the portion of said street lying just east of the sidewalk east of the Courthouse. The Board reserves the right to reject any and all bids.

Specifications for each of the above modes of construction are on file in the City Clerk's office. Bids to be accompanied by a certified check for \$1000.

J. S. MONTGOMERY, Mayor.
J. H. CLEARY, City Clerk.
JOHN WHITE, Treasurer.

MISCELLANEOUS

Street Sweeper

The City of Florence, South Carolina, will receive proposals until 12 o'clock noon April 12, 1912, for furnishing said city one street sweeper, horse-drawn, suitable for sweeping bitulthic pavement.

For information address H. K. Gilbert, Mayor. City reserves right to reject any or all bids.

To Steel Bridge Builders

Notice is hereby given that at the regular meeting of the Board of Supervisors, to be held in the Courthouse in Batesville, Miss., on the first Monday of April, A. D. 1912, bids will be received for building three steel bridges, the contract to be awarded to the lowest responsible bidder.

Plans and specification on file at the office of the Chancery Clerk in Batesville, Miss.

R. W. DRAPER, Clerk,

Batesville, Miss.

School Building

Lake Charles, La.
Bids will be received until twelve o'clock noon April 25, 1912, for the erection of any one of or all of the four two-story-and-basement Brick School Buildings at Lake Charles, La. Contractors submitting one estimate on all four of the buildings will be required to furnish separate estimates on each. Plans and specifications and conditions for estimating can be had at the office of Favrot & Livaudais, Ltd., Architects, No. 839 Gravier street, New Orleans, La., and can be seen at the office of E. S. Jenkins, Superintendent, Lake Charles, La.

Power Equipment

Yazoo City, Miss.

Sealed proposals for furnishing certain machinery and apparatus, including steam turbine driven alternating-current units, exciter units, railway converters, motor generator sets, switchboard panels, condensers and other accessory apparatus, will be received by the Public Service Commission of Yazoo City, Mississippi, until 3 o'clock P. M. on the 27th day of April, 1912, and then publicly opened for consideration.

Specifications and information may be obtained by application to the office of the Commission at Yazoo City, Mississippi. The right is reserved to reject any and all bids.

Notice to Architect

Galveston county invites competitive bids for plans and specifications for an up-to-date, modern and strictly sanitary jail building, to be four stories in height, to conform in architecture with that of annex building, to accommodate no less than 200 prisoners. Other required information will be given by the Building Committee when applied for. County reserves right to reject any or all bids. Bids and plans to be in County Auditor's office at Galveston, Texas, not later than May 1, 1912.

JOHN M. MURCH,

County Auditor.

Galveston, Texas, March 19, 1912.

Pumping Equipment

The City of Paris (Texas) has finished one well, total depth 1178', first 1105' is 8", remainder is 6" from base of 8" pipe to bottom of well; water stands 30' below surface of ground, and has been tested with a second-hand compressor to about 250,000 gallons in 24 hours. A second well will be complete 100' distance from present one, presumably of same depth and dimensions.

Proposals, including prices, will be considered by the City Council at 7:30 o'clock April 9, 1912, for pumping the two wells above referred to. The present plant will furnish ample boiler and steam power. Nothing will be needed but pumping equipment for the two wells above mentioned.

ED H. MCCUISTION,

Mayor.

FAIRBANKS-MORSE INDUCTION MOTORS

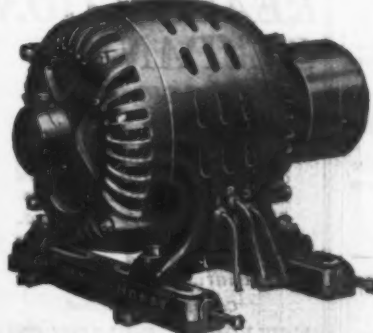
HAVE

High efficiency at both full and half loads.
High power factor.
Small idle currents.
High starting torque.
Large breakdown factor.
Low working temperature.

They will give you ideal service, freedom from dirt and grease and will reduce your power cost.

Sizes, 1 to 200 H. P.

Write for Catalog No. 938AM.



Fairbanks, Morse & Co.,

Branches in Principal Northern Cities

Atlanta, Ga., Jacksonville, Fla.,
Richmond, Va., New Orleans, La.,
Main Office: 900 So. Wabash Ave.,
Chicago, Ill.

Special Advertisements of General Interest.

Factory Site for Sale

We have a lot 125 by 260 feet, with 260 feet railroad frontage. This is one of the most desirable sites for warehouse or factory in this city. It is close in, on the car line, and has private siding connecting with three railroads.

We have a close price on this for a few days only. See us at once.

J. L. WOMACK & CO.

18 NORTH FORSYTH STREET

Bell Phone M 483. Station 578.

ATLANTA, GA.

J. T. KIMBROUGH

**WE LOCATE MANUFACTURERS
REAL ESTATE**

409-10 Atlanta National Bank Bldg.

ATLANTA, GA.

NOTICE

**Valuable Factory Building,
Machinery and Land
FOR SALE**

**Situate at Lawrenceville, Va.
on Southern R. R.**

By virtue of a resolution of the Board of Directors of the Bank of Lawrenceville, entered on the 30th day of January, 1912, we will sell at Public Auction at Lawrenceville, Va., on Tuesday, April 23, 1912, at 2 o'clock P. M., the following property, to wit:

First—Two 80 H. P. Atlas Boilers and one 125 H. P. Atlas Engine.

Second—A lot of shafting, pulleys, belts, etc.

Third—Five acres of land, on which is located a two-story metal-roof frame building, 257 feet long and 60 feet wide, and in addition to the main building there is a shed room 30x60, and a drykln 40x60, with all necessary piping, etc. This factory was formerly used as a furniture factory, and is well located, with sidetrack connected, and in the heart of the pine and hardwood district. The building and machinery are in a first-class condition, having been used very little.

Fourth—In addition to the above there is a large supply of manufactured material for sideboards, chiffoniers, etc., and about 500 mirrors, and a quantity of oil, varnish, glue and furniture trimmings.

This property will be offered separately as advertised, and then as a whole. **TERMS:** ONE-FOURTH CASH, and the balance in equal installments payable in one, two and three years, with interest from day of sale, with approved security.

For further particulars apply to the undersigned.

Bank of Lawrenceville

By CHAS. E. MAY, Cashier

Woodworking Plant and Planing Mill for Sale

Woodworking plant and planing-mill; exceptional opportunity; plant located at Nazareth, Pa.; fine industrial center; all brick buildings; first-class condition; plant fully equipped, modern machinery, to turn out all classes of woodwork; doubly equipped power; annual capacity \$120,000; now in operation. Owners will sell cheap. D. M. Leopold, Nazareth, Pa.

Prices on Pulverizers Wanted

We want prices of pulverizers to pulverize lime rock for agricultural purposes. Address

SNOW FLAKE LIME & ROCK CO.,
Lewisburg, West Virginia.

BRICK PLANT IN CENTRAL FLORIDA

FOR SALE

Now operating to full capacity. Inexhaustible clay deposit. Good-paying investment, but present owner has good reasons for wishing to sell. Address

"BRICK PLANT,"
Care Manufacturers Record.

Valuable Real Estate

For Sale April 6, 1912

House and lot in the town of Front Royal, Va., and about 300 acres of good land, accessible to the N. & W. and Southern railroads, Warren county, Virginia. Terms, one-third down, the remainder in two equal annual payments, with bond of trust on property for deferred payments.

M. L. GARRISON, M. D.

FRONT ROYAL, VA.

FACTORY SITES FARM LANDS

**Business Opportunities, Timber Lands,
Realty Investments**

We will take pleasure in submitting suggestions pertaining to either of the above departments.

S. L. NUSBAUM & CO.

600 Citizens' Bank Bldg. Norfolk, Va.

Cotton Mill

FOR SALE

Three-story Cotton Mill, 40x100 and wings, about 25,000 square feet of floor space, size of lot 100x200. Also all of the spinning machinery.

Kitson Lappers and Finishers, Automatic Waste Cleaners; Atherton, Saco and Pettie Cards; Card Grinders, Coilers, Woonsocket Slubbers and Speeders, Fales and Jenks Spinning and Twisting Frames, Draper Upright Spoolers and Denna Warpers. Shafting and Belting and Humidifying System. Must be sold.

SCHADEWALD MILLS,

3d and Huntingdon Sts., Philadelphia, Pa.

A'SSETS REALIZATION COMPANY

Capital \$10,000,000

Will loan on security requiring special investigation or close supervision, and not available for bank loans. Large enterprises financed. Prompt investigation of security offered, whatever its character or location.

Correspondence Invited

NEW YORK PHILADELPHIA
25 Broad St. Lafayette Bldg.
CHICAGO
First National Bank Building

Trustee's Sale

OF A VALUABLE

Coal Mine and Property

Modernly equipped with compressed air, located on the Illinois Central Railroad, near Mercer, Muhlenberg county, Kentucky, and Central City, Kentucky.

The mine has a present rated capacity of 500 tons per day, and is susceptible of rapid increase of tonnage at small outlay. Present operation in No. 9 stratum, under excellent mining conditions. There are 480 acres in fee simple, carrying coal measure and ample timber supply, and an additional 140 acres in coal rights, all in one body; thirty-eight miners' houses, twenty-one of which are new and modernly designed. The mine and all property of bankrupt to be sold at public sale and auction to the highest bidder on the premises, near Mercer, Muhlenberg county, Kentucky, on Thursday, the 18th day of April, A. D. 1912, at or about the hour of 1 o'clock P. M. on that day, upon usual court terms.

This sale will be made in pursuance and by virtue of the decree and order of sale in the matter of the Dovey Coal Company, now pending in the United States District Court for the Western District of Kentucky, Owensboro Division, in bankruptcy, dated March 8, 1912.

Interested parties may address Trustee at Central City, Ky.

W. L. GORDON, JR., Trustee.

**White, Gray and Red Granite, Feldspar, Silica,
Sand, Timber, Good Land, Water Power**

Wanted—To correspond with a party concerning the disposal of 400 acres of good land having the above specified resources to guarantee safe and very profitable investment. The land is situated 65 miles southeast of the city of St. Louis, in the State of Missouri, and one mile from Millers Station, on the Illinois Southern Railroad. The resources are inexhaustible. The water-power can be made a paying permanent business. Situations for town and park.

M. J. DOBSCHUTZ, Owner,

101 South Church Street, Belleville, Ill.

Complete Saw Mill Plant, Dry Kiln and Logging Equipment

FOR SALE

Mill has a daily capacity of 25,000 feet. Logging outfit consists of Locomotive, three and one-half miles of tramroad and six log trucks. Eighteen to twenty million feet of choice Pine timber, well blocked. Mill located about 35 miles south of Savannah, on the Seaboard Air Line Railway. Fifteen to twenty million feet additional timber can be had in easy reach of this plant. For full particulars address

ALBERT FENDIG & CO., Brunswick, Ga.

Awaiting development!

A fine bed of Kaolin, lying at edge of natural gas field in Arkansas—has shown high quality in laboratory and kiln tests—accessible to rail and easily handled.

Let me send samples and particulars.

W. R. LIGHTON,
Union Trust Company, Little Rock, Ark.

FOR SALE

Very Complete Lumber Operation
Saw Mill, Railroad, etc. 50 to 60 million feet, mostly Oak. Will sell very reasonable to quick buyer. Address

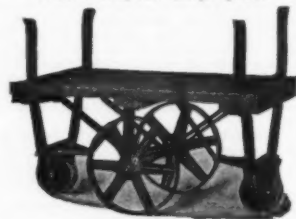
L. M. SCHWARZ,
86 Charles St., N. S. Pittsburg, Pa.

STAMP MILL FOR SALE

Two batteries, 10-head, 850-pound, good as new, all framing included; 2 Challenge feeders; 8x14 Dodge crusher; 5x7 two-cylinder link-motion hoisting engine with wire rope; 25 H. P. Erie City locomotive boiler. Fine prospecting outfit at big sacrifice. Details other mining machinery bargains on request. **LOCK BOX NO. 374, Salisbury, N. C.**

Roller Bearing CARS AND TRUCKS

of all kinds, for all purposes



Style 60

**Switches, Turntables,
Complete Industrial Railway Equipment.**

Write for Catalogue and Prices

The Chase Foundry & Mfg. Co.
COLUMBUS, OHIO

To Reach Machinery Buyers

Use the Recognized Channel

You may be making the "very best ever" in the way of machinery or other equipment for mills, factories, foundries, railroads, etc., but to sell your products you've got to advertise. If you want to sell to the South, use the recognized channel—the Manufacturers Record.



Harrison Place, Irvington, N. J., Road Constructed with Tarvia X.

Latest Developments in Tarvia

TARVIA was the first bituminous preparation which appeared on the American market for preserving macadam roads and eliminating the dust nuisance.

The Tarvia, applied hot to the road, percolated into the macadam, sealed up the voids and locked the stone in a tough, plastic, automobile-proof matrix. The early work consisted merely of surface applications with "Tarvia A."

The development of the process has brought more and more thorough treatments until the best practice now calls for the use of Tarvia from top to bottom of the wearing course, applied during construction.

In some towns it has become a matter of fixed policy to build all new roads and pavements with "Tarvia X" as a binder.

Tarviated macadam is so much *more durable* than ordinary macadam, especially under automobile traffic, that the reduction in the cost of maintenance more than pays for the Tarvia. The use of Tarvia is thus justified merely on account of ultimate economy.

In addition, the tarviated surface is smoother and firmer. It is also dustless in dry weather and mudless in wet weather.

Tarvia is made in three grades:

"Tarvia X" for use in constructing roads.

"Tarvia A" for hot surface applications.

"Tarvia B" (applied cold) for dust prevention and road preservation.

Booklet describing the latest developments in methods for building tarviated roadways and pavements will be sent free on request. Address our nearest office.

BARRETT MANUFACTURING COMPANY

New York
Cincinnati

Chicago
Kansas City

Philadelphia
Minneapolis

Boston

St. Louis
New Orleans

Cleveland
Seattle

Pittsburgh
London, Eng.

Canadian Offices:—Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B., Halifax, N. S.



Bargains in Machinery and Supplies.

FOR SALE—CHEAP

Gas Producer Plant

1—115 H. P. 4-cylinder Bruce-Macbeth Producer Gas Engine. 1—125 H. P. Wile Producer. Complete in detail. Used a short time only. Absolutely good as new. Price for the outfit \$2000 f. o. b. cars Chicago.

PFANNMUELLER ENGINEERING CO.
3701-3-5-7 S. Ashland Ave., Chicago.

Rebuilt Engines and Boilers

Engines—Corliss.—18x42 Lane & Bodley, 18x36 Ohio Heavy Duty, 16x42 Allis, 12x30 Lane & Bodley.

Engines—Automatic.—14½x24 Buckeye, 11x16x12 Buffalo Compound, 13½x15 Taylor, 13x16 Atlas, 13x12 Harrisburg-Ideal, 13x12 Phoenix, 12x14 Green, 12x12 Armstrong & Sims, 11x16 Atlas, 10x12 Valley, 8x14 Noyes.

Engines—Throttling.—18x24 Atlas, 14x18 Sinker-Davis, 14x14 Lewis Vertical, 12x16 Reed, 12x14 Brownell, 10x16 Bass, 10x12 Atlas, 9x14 Lane & Bodley, 8x10 Erie, 6x8 Industrial.

Boilers—Stationary.—72x18, 66x16 High-Pressure, 72x18 Standard, 72x18, 66x18, 60x16, 60x14, 54x14, 48x14, 44x14, 42x12, 36x16, etc.

Boilers—Fire Box.—100, 80, 60, 50, 40, 35, 30, 25, 20, 16, 12, 10 and 8 H. P., etc.

Boilers—Vertical.—50, 40, 35, 30, 25, 20, 16, 12, 10, 8, 5 and 3 H. P., etc.

Heaters.—All sizes. Open and Closed.

Pumps.—All sizes. Single and Duplex.

Electrical.—30 K. W. Generator, direct connected to 8x10 Skinner Engine; 20 K. W. generator, direct connected to 8x10 Economic Engine; 18 K. W. Belted Generator.

Miscellaneous.—Sawmills, Lath Mills, Edgers, Cut-off Saws, Re-Saws, Blowers, Exhaust Fans, Tanks, etc. Write for list. Also full assortment of new machinery.

Sole manufacturers of the celebrated "Leader" Injectors and Jet Pumps. Send for circular.

THE RANDLE MACHINERY CO.
1734 Powers Street. CINCINNATI, OHIO.

AT YOUR PRICE BEFORE REMOVAL

20x42 R. H. Harris Corliss, 14" wheel, 18x42 R. H. Allis Corliss, 16" wheel, 18x42 L. H. Allis Corliss, 16" wheel, 18x24 L. H. Allis Automatic, 20x24 L. H. Green Automatic.

First Class. Immediate shipment.
PITTSBURGH MACHINERY & EQUIPMENT CO.
Fulton Building, Pittsburgh, Pa.

FOR SALE CHEAP

Four 100 H. P. Portable Return Flue Boilers, 12"x16" Erie City Engine, 12"x16" Birmingham Engine, 18"x22" H. S. & G. Engine, R. Hanc Knife Grinder, 10" Outside Molder.

Tampa Machinery Exchange, Tampa, Fla.

RE-BUILT MACHINERY

Ready for Immediate Shipment

1 Class "J" Ingersoll & Rand Belt-Driven Air Compressor; size of cylinders, 16½x16 and 25½x16½.

1 Class "J" Ingersoll & Rand Belt-Driven Air Compressor; size of cylinders, 14½x14 and 22½x14.

1 200 H. P. General Electric Induction Alternating-Current Motor, three-phase, 60-cycle, 440-volt, speed 600 rev., 240 amp., complete with switchboard.

1 2-ton capacity Otis Electric Elevator, complete with counterbalance weights, the necessary sheaves and cable.

1 22x42 Hamilton Heavy-Duty Corliss Engine, 11x42 Frazier & Chalmers Corliss Engine.

2 78"x30" Horizontal Triple Riveted Boilers, 110 lbs. pressure.

5 72"x30" Horizontal Triple Riveted Boilers, good for 100 lbs. pressure.

1 35 H. P. Erie City Economic Fire Box Boiler.

1 20x12x16 1500-gallon capacity Underwriter's Fire Pump.

1000 to 8000-gallon capacity Storage Tanks.

1 10"x16" Round Tank, ¾" shell, ½" heads, capacity 9500 gallons.

14 8000-gallon Oil Storage Tanks.

40 6000-gallon Oil Storage Tanks.

1 66"x16" Round Tank, good for 150 lbs. pressure.

1 66"x12" Round Tank, good for 100 lbs. pressure.

1 66"x7" Round Tank, good for 150 lbs. pressure.

Write for our Special Machinery Price-List No. 239.

Chicago House Wrecking Co.

35th and Iron Sts.

CHICAGO, ILLINOIS

PLANT FOR SALE

At Cambridge City, Ind., on the Pan Handle Railroad

2 70-ton Bucyrus Steam Shovels.

6 H. K. Porter Locomotives, 9x14, 3-ft. gauge.

1 H. K. Porter Locomotive, 9x14, 3-ft. gauge.

1 Baldwin Locomotive, 9x14, 3-ft. gauge.

21 3-yd. Ryan & McDonald one-way Dump Cars, 3-ft. gauge.

54 4-yd. Ryan & McDonald one-way Dump Cars, 3-ft. gauge.

11 Frogs and Switches, 60-lb. Rail.

1 ¾-yd. McKelvey Concrete Mixer.

1 ¾-yd. McKelvey Concrete Mixer.

2 Guy Derricks, 74-ft. mast, 65-ft. boom, with bull wheels, guy wires, etc.

1 Small Stiff-Leg Derrick.

1 Large Stiff-Leg Derrick with bull wheel.

6 Guy Derricks, 60-ft. mast, 55-ft. boom, with bull wheels, guy wires, etc.

1 Guy Derrick, 50-ft. mast, 55-ft. boom, with bull wheels, guy wires, etc.

1 3-drum Lambert Hoisting Engine, 7x10 (double engines).

3 Double Drum Mundy Hoisting Engines, 6½x10 (double engines).

3 Double Drum Mundy Hoisting Engines, 6½x12 (double engines).

(With boilers and hoisting cables.)

2 Double Drum Lambert Skeleton Engines, 6½x10.

5 Dake Swinging Engines.

4 Mundy Swinging Engines.

1 40 H. P. Portable Locomotive Boiler.

6 Vertical Boilers. 3 Edison Pumps.

3 Small Horizontal Steam Pumps.

3 No. 6 Morris Centrifugal Pumps.

1 No. 5 Morris Centrifugal Pump.

6 Ideal Concrete Buckets.

3 Eclipse Concrete Buckets.

16 Slide Dumping Buckets.

1 Double Lane Owen Clamshell Bucket, 1 cu. yd. capacity.

P. F. BRENDLINGER, Contractor

1009 Arcade Building PHILADELPHIA

POWER AND LIGHTING EQUIPMENT TO BE MOVED QUICK

1 each 150 H. P. Hamilton Corliss R. and L. 16x36 Gilder-Frame Engines, connected to condensers, complete, with feed-water heater, throttle valves, lubricators, each \$800.

2 G. E. 500-volt D. C. 100 K. W. Belted Generators, A-1 condition, with switchboard, complete, each \$400.

1 G. E. 45 K. W. 110-volt D. C. Generator, with switch, \$450.

1 Westinghouse 75 K. W. 220 A. C. 60-cycle three-phase Generator, with switchboard, \$700.

1 Westinghouse Motor, 40 H. P., 220-volt, A. C., 60-cycle, three-phase, \$450.

5 125 H. P. Return Flue Boilers, good for 30 to 100 pounds pressure, each \$250.

Also a large variety of second-hand Trolley Equipment. Let me know your requirements. H. D. WARNER, Bristol, Conn.

100 K. W. 250 Volt Westinghouse Belted Generator

Six-pole, compound wound, direct current, type M, speed 550 R. P. M., with base pulley and field rheostat. Condition like new. Guaranteed. Price \$750.00 cash. Send for list of other Bargains.

MILLER-OWEN ELECTRIC CO.,

217-219 First Ave., Pittsburgh, Pa.

15 H.P. 3-Phase 60-Cycle 220 Volt Westinghouse Motor

Slip-ring, type F, speed 900-450. Has rails, pulley starter and controller for varying speed. Slightly used. Guaranteed. Price \$300.00 cash. Send for list of other Bargains.

MILLER-OWEN ELECTRIC CO.,

217-219 First Ave., Pittsburgh, Pa.

DYNAMOS and MOTORS

SPECIAL BARGAINS

Practically new, 200 K.W., 125 volt, 6-pole, Burke Dynamo, 480 R.P.M., \$825.00.

150 H.P., 250 volt, type "M.P.", 6-pole, C. & C., Shunt Wound Motor, 350 R.P.M., \$675.00.

100 K.W., 6-pole, 250 volt Crocker-Wheeler Dynamo, 650 R.P.M., \$640.00.

100 H.P., 2-phase, 60-cycle, Westinghouse, type "C," Induction Motor, 1120 R.P.M., \$450.00.

300 Dynamos and Motors in all sizes, thoroughly overhauled and guaranteed.

We buy, sell and rent.

E. LEVENE & CO.

124 N. Third St.

Philadelphia

FOR SALE OR RENT

1 30-ton Little Giant Special High Crane Traction Steam Shovel. 1 25-ton Little Giant Traction Steam Shovel. 1 No. 4 Thew Traction Steam Shovel. 1 No. 1 Thew Traction Steam Shovel. 2 10x16" Porter 36" S. T. Locomotives. 1 13½x22" Baldwin 3-driver S. G. S. T. Locomotive. 2 10-ton 3-wheel New York Steam Rollers. 1 3-ton Tandem Universal Puddle Roller. 1 2½-ton Tandem Iroquois Asphalt Roller. 7 Steel Guy Derricks, 70' masts. 2 2-yd. Hayward Orangepeel Buckets. 1 2-yd. Hayward Clamshell Bucket. 1 1½-yd. Hayward Clamshell Bucket. 5 Lambert D. Boom Swing Electric Hoists, 40 and 60 H. P. D. C., 220 volts. 40 Hoisting Engines, Lidgerwood, Mundy and Lambert, skeleton, mounted, with and without boom swings, from 6 to 100 H. P. Air Compressors, Pumps, Boilers, Engines, Rock Crushers, etc. Get our price on new derricks before purchasing. HENRY A. HUPNER'S SONS CO., Philadelphia, Pa.

CORLISS ENGINES

1 18x36 Bates.
1 16x42 Allis.
1 16x42 Brown.
1 18x42 Lane & Bodley.
1 20x48 Wetherill.
1 22x48 Hamilton.
1 24x42 Atlas.
1 22x48 Allis.
1 28x54 Hamilton.
Automatic Engines of all sizes.
1 40-ton Corliss Engine Type De La Vergne Ice Machine.
1 60-ton Corliss Engine Type De La Vergne Ice Machine.
1 lot Brewery Tanks.
Woodworking Machinery of all kinds.
Belting, Shafting, Pulleys and Hangers.
CLEVELAND BELTING & MACHY. CO.,
Cleveland, Ohio.

Maximum Value Minimum Price

Buy a rebuilt car of standard make from a reputable concern, and you will be thoroughly satisfied with your purchase.

We have been in business since 1902. Our satisfied customers are our salesmen.

1910 Peerless Seven-Passenger Touring Car\$2000.00

1909 Peerless Five-Passenger Touring Car 1500.00

1910 Chalmers "Thirty" Roadster 850.00

1910 Chalmers "Thirty" Touring Car 850.00

1910 Chalmers "Thirty" Pony Tonneau 850.00

Full specifications and descriptions of any of the above cars, will be mailed upon application.

We also have a limited quantity of other models of Peerless and Chalmers Cars to offer.

Zell Motor Car Company

11-13-15 E. Mt. Royal Ave.

BALTIMORE, MD.

WAGON PLANT EQUIPMENT

We recently purchased the wagon plant of the Hickman-Ebbert Company and are prepared to sell the following at very reasonable prices: 52 Channel Iron Ball-Bearing Lumber Yard Cars. 12 Transfer Cars. 6 Turntables with railing frogs. 1 Improved Fellow Sawing Machine with saws. 1 Patent Wheel Tenoning and Cut-off Machine. 1 Patent Automatic Double Vertical Chisel Hub Mortising Machine. 1 Spike Tenoning Machine. 1 lot Band Saws, various sizes. 1 lot Shaper Knives, various sizes. 1 Set 2½" Steel Dies. 12 Slide Paint Trucks. 1 Hot Blast Heating Apparatus, complete for drykiln; cost \$2250. Each article mentioned is of the best manufacture, has been only slightly used, and is in first-class condition. Address offers and inquiries to

THE UNIVERSAL STENOGRAPH COMPANY

Owensboro, Ky.

FOR SALE

25-ton Rhode Island Locomotive

36" gauge, in fine condition, thoroughly overhauled, new Westinghouse Air Brake Boiler tested one hundred and sixty pounds steam, \$1500 f. o. b. Columbia, S. C.

GIBBES MACHINERY COMPANY

COLUMBIA, S. C.

WE BUY

AND

DISMANTLE

Factories

Mills

Machine Shops

and all kinds of

Industrial Plants

We are always in the market to buy

Scrap Iron and Steel

OF EVERY KIND

FRANK SAMUEL

Harrison Building

15th and Market Streets

PHILADELPHIA, PA.

POWER EQUIPMENT

Good as New Machinery For Sale at a Bargain

No. 1. C. & C., 100 K. W., No. 12873, 115 volts, amp. 870, 530 R. P. M., type MP.

No. 2. C. & C., 100 K. W., No. 1881, 115 volts, 530 R. P. M., type MP.

No. 3. C. & C., 100 K. W., No. 12911, 115 volts, amp. 870, 530 R. P. M., type MP.

No. 4. Fort Wayne, frame 637½, type L.B., form 1, K. W. 76, poles 6, R. P. M. 620, volts on load 110, full load 125, amp. full load 600.

Two 12-inch Double Belts, 62 feet long.

One 14-inch Double Belt, 70 feet long.

Two Solid Pulleys, 12-inch face, 72-inch diameter, 4 3-16-inch bore.

Two Split Pulleys, 14-inch face, 60-inch diameter, 4 3-16-inch bore.

One 3-Panel Blue Vermont Marble Board, with instruments and switches.

The Salisbury Light, Heat & Power Company

SALISBURY, MARYLAND

BARGAINS

1 18x36 300 H. P. Allis-Chalmers Corliss.

1 Underwriters' Fire Pump.

1 20-ton Vilter Refrigerating Machine, complete.

1 lot Leather Belting, 6" to 24", good condition.

500 Steel Pulleys, 6" to 60".

2 tons Steel Shafting, 1 3-16" to 5".

1 30 K. W. 110-volt 365 R. P. M. Western Electric Generator, complete.

1 15 K. W. 110-volt Western Electric Generator, 650 R. P. M.

1 30 K. W. 110-volt Western Electric Generator, direct connected to Williams upright steam engine.

2 75 K. W. 60-cycle single-phase 750 R. P. M. Westinghouse Alternators, complete.

All in stock, ready for immediate shipment. **INDEPENDENT ELECTRIC MCHY. CO.,** 316 S. W. Blvd., Kansas City, Mo.

WILL TRADE

One Beaman & Smith Boring and Facing Machine. Will bore 12 inches in diameter, 24 inches long, and face to 20 inches in diameter. Machine is complete with counter-shaft, boring bars and facing spindles. Can be seen at 35 Warren St., New York. Rider-Ericsson Engine Co.

MACHINERY

Thirty-seven Thousand

SQUARE FEET

FLOOR SPACE

DEVOTED

TO

NEW

AND

Second-Hand MACHINERY

In the Power Department we have a large and well selected stock of standard Boilers, Engines, Pumps, Air Compressors, Hoisting Engines, Motors, Dynamos, Direct Connected sets, Etc.

The Machine Tool Department never had a better assortment of modern tools.

Planers, Shapers, Lathes, Boring Mills, Drills, Grinders and Hammer of different styles and makes.

The most exacting machine tool buyer should find his requirements here.

Two hundred and fifty Wood-working Machines, such as Planers, and Matchers, Double and Single Surfacers, Jointers, Saw Tables, Trimmers, Resaws, Moulders, Shapers, Mortisers, Sanders, Etc.

In our well equipped shop every machine is rebuilt and put in guaranteed condition before shipping.

Each department issues a monthly stock list. We shall be glad to send you one.

Frank Toomey, Inc.

127-131 North 3rd St.

PHILADELPHIA, PA.

BARGAINS IN STOCK

Immediate Delivery, Rebuilt and Guaranteed

ENGINES

25"x48" Wetherill Corliss, 150 lbs. steam, extra heavy.
18"x36" Hamilton Corliss.
One (1) each 14"x16", 16 1/2"x18", 14"x28" and 12"x24" Buckeye.
One (1) 15"x16" New York Safety Center-Crank.
11"x30" Putnam.
Large assortment of Slide-Valve Engines, all sizes.

BOILERS

One (1) 200 H. P. Helme W. T.
One (1) 72"x18" H. R. T., 100 lbs. steam.
Large assortment of Vertical and Locomotive Boilers.

AIR COMPRESSORS

18"x18 1/2"x24" Ingersoll-Sergeant.
14"x9"x12" Ingersoll Two-Stage, "Imperial" type.
14 1/2"x9 1/2"x8" Ingersoll Two-Stage, belt driven.
12"x14"x14" Hall, steam driven.
14"x12" Laidlaw-Dunn, belt driven.
12"x12"x12" Laidlaw-Dunn, steam driven.
And many others.

HEATERS

1000 H. P. Cochran, late type.
1000 H. P. Berryman Gleaner.
800 H. P. Wheeler, New.
600 H. P. Berryman.
500 H. P. Berryman.
400 H. P. Wetherill.

PUMPS

One (1) 18"x26"x18" Snow Duplex.
Two (2) 16"x10 1/2"x10" Worthington Duplex.
One (1) 500-gal. Underwriter's Fire Pump.
One (1) 750-gal. Underwriter's Fire Pump.
One (1) 10"x12" Duplex D. A. Smith-Valle Power Pump, 6"x6" Davis Plunger.
500 H. P. Conover Jet Condenser, complete.
Vacuum and Condensing Pumps, all sizes.

MACHINE TOOLS

Large stock of Machine Tools. Note my adv. in last week's issue. Send for Special List. Correspondence solicited.

HERMAN L. WINTERER

908-910 Beach St. Philadelphia, Pa.

Engines and Generators

Large Stock of Engines and Generators
Locomotives and Cars

The Dorner Railway Equipment Co.
Irving Park Blvd., cor. Southport, Chicago.

Second-hand Electric Motors

We have the largest stock of second-hand electric motors and generators in America, and buy and sell, rent, exchange and repair electrical machinery of all kinds. Send for our "Monthly Bargain Sheet," showing complete stock with net prices. All machines guaranteed in good order.

GREGORY ELECTRIC CO.,
Sixteenth and Lincoln Sts., Chicago, Ill.

DYNAMOS AND MOTORS

I buy, sell, rent and exchange.
The best and the cheapest.
Let me know what you have for sale and what you want to buy.

THOMAS YEARSLEY

211 N. 3rd Street, Philadelphia, Pa.

BARGAIN SALE

Planing Mill and Box Factory Machinery

Consisting in part of 1 complete Sturtevant Hot Air Drykiln, 2 Double Sturtevant Fans, 7 Planers and Matchers, 1 60" Band Resaw, 2 Molding Machines, 1 End Matcher, 2 Boring Machines for flooring, 3 Power Rip Saws, 1 Shaving Press. Also Morgan Machine Co.'s Open Back Nailers, Lock-corner Machines, Setting-up Machines, Trimmer Saws, Rip Saws, Cut-off Saws, Power Matchers, etc.
Special bargain on Drykiln.

Address
"BARGAIN SALE,"
Care Manufacturers Record, Baltimore, Md.

50 K. W. General Electric 125-volt 6-pole Dynamo, direct connected 3-cylinder vertical gasoline engine, complete, perfect condition, \$1600, f. o. b. New York. Can be changed for gas at about \$100.

DUZETS & SONS

Hudson Terminal NEW YORK

FOR SALE

One 26"x14" Lathe. One 20"x10" Lathe. Two 14"x6" Lathes. One 30 H. P. Traction Engine. One No. 2 B. Koehring Cement Mixer. One No. 1 B. Koehring Cement Mixer. One No. 1 Smith Mixer with Boiler and Engine. Two 125 H. P. Hor. Tub. Boilers. Two 110 H. P. Hor. Tub. Boilers. Three Berlin Planers and Matchers, 4"x9".

CHAS. T. LEHMAN, - Birmingham, Ala.

PIPE, SECOND-HAND

All sizes, any quantity, furnished with new threads and couplings, guaranteed for service.

PIPE CUT TO SKETCH

CONTRACTORS' EQUIPMENT OF EVERY DESCRIPTION

PIPE & CONTRACTORS SUPPLY CO., 3 Dover St., NEW YORK

SPIRAL PIPE

FOR SALE CHEAP

9000 feet Galvanized Spiral Riveted Flanged Pipe, size 9". Heavy gauge, in first-class serviceable condition, suitable for dredge work, air pressure, etc. Will make very attractive price in quantities.

MARINE METAL & SUPPLY CO.,

167 South Street,

NEW YORK CITY.

FOR SALE PIPE

Second-Hand

All sizes, 1/8 inch to 24 inches

Furnished with new threads and couplings, suitable for all practical purposes; large stock constantly on hand, together with a general assortment of used contractors' machinery.

MARINE METAL & SUPPLY CO.

167 South St.

NEW YORK

SECOND-HAND MACHINERY

LATHES.

13x 5 Seneca Falls, comp. rest, pan.
14x 6 Putnam, C. R., P. C. F.
14x 6 Reed, R. & F.
15x 6 Putnam, chuck and taper.
16x 6 Robbins, compound rest.
16x 6 Reed, C. R., P. C. F. taper.
16x8 Porter, compound rest.
18x 6 Lodge & Davis, C. R., P. C. F.
18x 8 American, taper chuck.
18x 8 Putnam, R. & F. rest.
20x 8 McMahon, C. R. chuck.
20x 9 Pratt & Whitney, compound rest.
20x10 Prentiss, C. R., P. C. F.
20x10 Draper, C. R., P. C. F.
24x14 Reed, high speed.
26x12 Pond, C. R. and chuck.
26x22 New Haven, plain turning.
27x12 Pratt & Whitney, C. R., P. C. F.
30x12 Niles, C. R., P. C. F.
32x12 Johnson, triple geared, C. R.
32x17 Bement-Miles, C. R., triple geared.
36x14 and 16 Lodge & Shipley, C. R., P. C. F.
36x16 Reed, C. R., P. C. F.
38x14 Pond, P. L. R., P. C. F.
38x20 Fay & Scott, C. R., P. C. F.
40x18 Newark, triple geared, C. R., P. C. F.
46x38 Fitchburg, compound rest, P. C. F.
54x20 Putnam, C. R., T. G.
102x35 Bement, compound rest, P. C. F.
An assortment of speed lathes.

SCREW MACHINES.

20x8 Bogart, turret on carriage.
23 1/2" Pearson, F. B. G., P. F.
18x6 Fay & Scott, plain turret.
2" Pratt & Whitney, hub former.
24" American, heavy turret.
24x24 Jones & Lamson, flat turret.
20x6 Bardons & Oliver, F. B. G.
No. 2 1/2" Warner & Swasey, wire feed.
No. 2 1/2" Garvin, wire feed, friction head.
No. 1 Garvin, wire feed.
3 1/2" National Acme, automatic.
3 1/2" Pratt & Whitney, screw shaver.
No. 2 Warner & Swasey, hollow hexagon.
18x6 Springfield, univ. fox.
No. 6 Brown & Sharpe, friction head.
1" Smurr & Kamen, wire feed.
1 1/2", 1", and 2 1/2" Pratt & Whitney, automatics.
2 1/2" 1-spindle Gridley, automatic.
1 1/2"x18" Pratt & Whitney.

MILLERS.

No. 4 1/2" Becker, small plain.
No. 2 Le Blonde, plain, back gears.
No. 2 Pratt & Whitney, Lincoln pattern.
No. 3 Cincinnati, plain.
No. 12 Brown & Sharpe, manufacturers'.
No. 15 Brainerd, small universal.
Bement & Smith, planer type for automobile work.

DRILLS.

26" Lodge & Davis, B. G. & P. F.
28" Barnes, B. G. and P. F.

PRENTISS TOOL & SUPPLY CO.

SINGER BUILDING, 149 BROADWAY, NEW YORK

Warehouse, 439 Communipaw Ave., Jersey City, N. J.

WROUGHT PIPE FOR SALE

200,000 Feet 4" Pipe. 100,000 Feet 2" Pipe.
200,000 Feet 2 1/2" Pipe. 200,000 Feet 1" Pipe.

WANTED TO BUY

6", 6 1/2", 8", 10" and 12" casing.

Texas Supply Co., Beaumont, Texas

In revising our manufacturing equipment we find the following first-class

Used Machine Tools

which we offer at attractive prices

ENGINE LATHES

16 in. x 6 ft. Hendey, Q. C. G.
16 in. x 6 ft. Pratt & Whitney, Q. C. G.
16 in. x 8 ft. Reed.
18 in. x 8 ft. Lodge & Shipley, Q. C. G.
18 in. x 10 ft. Lodge & Shipley, Q. C. G.
20 in. x 8 ft. Lodge & Shipley, Q. C. G.
20 in. x 10 ft. Lodge & Shipley, Q. C. G.
24 in. x 8 ft. Lodge & Shipley, Q. C. G.
24 in. x 10 ft. Lodge & Shipley, Q. C. G.
27 in. x 10 ft. Lodge & Shipley, Q. C. G.
36 in. x 12 ft. Lodge & Shipley, Q. C. G.
36 in. x 14 ft. New Haven.

SPECIAL LATHES

24 in. x 7 ft. Lodge & Shipley Chucking Lathe.
No. 3 Lodge & Shipley Rapid Reduction Lathe.

METAL SAWS

No. 3 Nutter-Barnes Cold Saw.
Franklin Cold Saw, 3 1/2 in. capacity.
Globe Power Hack Saw, 8 in. capacity.

MISCELLANEOUS MACHINES

Whitton Centering Machine.
Mumford 12 in. x 40 in. Molding Machine.
Write for complete description with prices of machines in which you are interested.

THE LODGE & SHIPLEY MACHINE TOOL CO.
CINCINNATI, OHIO

PLANERS.

20x20x4 Pease, 1 head.
36x36x3 Gleason, 1 head.
36x36x7 Sellers, 1 head.
36x36x12 Betts, 4 heads.
30x30x10 Gleason, 1 head.
48x48x15 Pond, 3 heads.
48x42x8 Farrell, 1 head.
30x30x8 Davis & Egan, 2 heads.

SHAPERS.

14" Lodge & Davis, plain.
18" Putnam, friction.
25" Lodge & Davis, shifting belt.
30" Hendey, friction.
30" Gould & Eberhardt, crank.
17" Juengst, horizontal crank.

MISCELLANEOUS.

54" Niles, car wheel lathe.
Boring Mill, 37" Bullard, 2 heads.
Boring Mill, 10" Pond.
Boring Mill, 23 1/2" bar, Bement.
Boring Mill, 48" Colburn.
Boring Mill, 62" Bullard.
Boring Mill, 4" bar, Betts, horizontal.
Grinder, No. 16, Brown & Sharpe, plain.
Press, No. 4, Mossberg inclinable.
Press, No. 4, Stiles, pattern.
Press, No. 55, Ferracute, heavy geared.
Pipe Machine, 4" Curtis & Curtis.
Boring Mill, 2-sp., Beaman & Smith.
Grinder, Style "C", American twist drill.
Gear Cutter, 22"x4", Gould & Eber.
Gear Cutter, 72", Gould & Eberhardt.
Grinder, Walker, electric surface.
Gas Engine, 3 H. P. Fairbanks.
Hammer, 25 lbs., Dupont trip.
Hammer, 50 lbs., Bradley compact.
Hammer, 200 lbs., American, Steam.
Hammer, 1000 lbs., Pratt & W., drop.
Slotter, 12" Betts.
Grinder, Sellers, universal tool.
Welding Outfit, Sanford.
Press, No. 68, Bliss, double acting.
Grinder, No. 23, Landis, plain.
Furnace, No. 38, American Gas.
Saw, No. 5, Cochrane & Bly.
3 H. P. Motor, 230 volts.
7 1/2 H. P. Motor, 230 volts, D. C.

PUMPS FOR SALE

One Davidson Single Compound Condensing Pump, capacity 1,000,000 gallons in 24 hours. High-pressure steam cylinder, 16" diameter. Low-pressure steam cylinder, 32" diameter. Length of stroke, 24". Water cylinder, 13 3/4" x 24". Steam pressure, 50 to 125 lbs. Pump in first-class operating condition. Complete, with lubricators, rollers, etc. Can be seen in operation until May 20, 1912. One Deane Duplex Pump, 3x2x3. One Knowles Duplex Pump, 3x2x3. (A 2,500,000-gallon pump replacing present pump.)

WATER DEPARTMENT,
North Attleboro, Mass.

**Drilling Machines, Etc.
FOR SALE**

One No. 7 and one No. 8 Star Drilling Machine, guaranteed to be in first-class condition and subject to inspection, with tools, to drill to any depth and any size, including two new unused stems 5" and 5 1/2" diameter. All kinds of fishing tools and equipment for well drilling.

A. E. TRIPP, Indianapolis, Indiana.

WANTED TO EXCHANGE

We have a Coe No. 1 Veneer Sawmill as good as new, in use less than six months, which we will exchange for following: Hydraulic press about 35"x72", with retainers; one double-trim saw, suitable for ripping and trimming built-up stock, and one drag saw. Will trade for new or slightly used machines. HIGH POINT VENEER & PANEL CO., High Point, N. C.

ENGINES AND CONTRACTORS' EQUIPMENT FOR SALE

Three pairs twin Corliss Engines, cylinders 20 by 42. Will sell at sacrifice. Guaranteed in first-class condition and can be delivered immediately. Can be separated if desired. Also the following: 87 Ellison 1-yard dump cars, 36 gauge; 75 tons relay rails, 45 to 60 pounds. 1 Mundy 7 by 10 D. C. and D. D. hoisting engine. Cheap to quick buyer. Address BOSTON IRON & METAL CO., BALTIMORE, MD.

**DRILLING EQUIPMENT
FOR SALE**

29 practically new No. 7 Water Leyner Drills, with guide shells, complete, with air-line connections. Leyner patent starters, water tanks, adjustable base, screw columns, water hose, and two sets of drill steels to each drill. These drills were used only a few weeks before mines closed down and are good as new. 1 20x12 1/2 x 18x20 Norwalk Air Compressor, absolutely good as new. Only operated about two weeks. For further particulars write. INDEPENDENT PHOSPHATE COMPANY, Columbia, Tennessee.

FANS FOR SALE

Four—Sturtevant Fans with Sirocco runners. Approximate 60,000 cu. ft. of air per minute x 2" W. G. pressure. Driven by 4 Sturtevant 10 x 18 x 10 compound engines direct connected.

Six—Sirocco Fans. Approximate 60,000 cu. ft. of air per minute x 2" W. G. pressure.

In good working condition. Can be seen at 39th street and 1st avenue by applying to Mr. R. Darlington.

THE NEW YORK EDISON CO.
NEW YORK CITY, N. Y.

**For Sale.
TRAVELING CRANES
3 MOTOR, 220 VOLT D. C.**

1—52' span for 40 tons
4—40' span for 20 tons
1—35' span for 15 tons
1—33' span for 10 tons
5—33' span for 5 tons

Cornell Iron Works
26th St. and 11th Ave. NEW YORK

FIRE PUMP FOR SALE

Blake 500 gallon Underwriters Fire Pump, was in commission but fifteen months, in excellent condition.

Tennessee Oak Flooring Co., Nashville, Tenn.

**Heater and Purifier
FOR SALE**

One second-hand "BERRYMAN" HEATER AND PURIFIER in perfect condition and guaranteed good as new. Will sell cheap for cash. ADDRESS

M. F., care Manufacturers Record
BALTIMORE, MD.

HOWARD W. READ COMPANY

3d and Arch Sts.
PHILADELPHIA, PA.

Boilers, Engines, Pumps

Hoisting Engines

Every Size and Every Duty

Immediate Shipment
Catalogue on Request

**Let us figure with you on your
POWER PLANT**

You will have a good selection, of quick delivery and the lowest prices consistent with the conditions and values. Permit us to give you details, or send for our complete list.

CORLISS ENGINES

1 30"x60" "Flashkill," girder frame, R. H. \$350
1 24"x56" "Watts-Campbell," girder frame, L. H. 180
1 20"x48" "Harris," girder frame, L. H. 145
1 18"x32" "Naylor," girder frame, R. H. 135
1 16"x24" "Ohio," heavy duty, L. H. 125
1 14"x36" "Frick," girder frame, R. H. 75
1 12"x24" "Whitehill," girder frame, R. H. 65
1 9"x24" "Cooper," girder frame, L. H. 50
1 18"x12" "Watts-Campbell," girder frame, L. H. 135

AUTOMATIC ENGINES

1 27"x18" "Armington & Sims," C. C. 125
1 16"x16" "Weston," C. C. 55
1 12"x12" "Erie City," C. C. 35
1 12"x14" "Atlas," C. C. 30
1 10"x12" "Atlas," C. C. 25
1 10"x10" "Westinghouse," C. C. 25

HORIZONTAL SLIDE VALVE ENGINES

1 16"x18" "Erie City," S. C. 50
1 15"x16" "Nagle," C. C. 40
1 10"x12" "Nagle," C. C. 15
1 10"x10" "Metropolitan," S. C. 10
1 8 1/2"x11" "Farquhar" Ajax, C. C. 10

BOILERS

1 250 H. P. "Heine," water tube, 125
1 150 H. P. "Heine," water tube, 75
1 70 H. P. "Nagel," locomotive type, 45
3 72"x18" "Penna. Boiler Works," return tubular, each, 50
2 72"x18" "C. & G. Cooper," return tubular, each, 50
1 40 H. P. "Erie City," economic type, 25
We also have a large and well-selected stock of iron and woodworking machinery, electrical equipment and contractors' outfits. Send for latest price-list.

L. F. SEYFERT'S SONS, Inc.

437-439-441 N. 3d St., Philadelphia.

Railroad and Contractors' Equipment and Supplies.**The AMERICAN FROG & SWITCH CO., Hamilton, O.
FROGS, SWITCHES, SWITCH STANDS, RAIL BRACES.****For Sale—Ditching Dredges, &c.**

Marion 1-yd. Dredge, used on one job, good order, cheap. Browning 1 1/2-yd. Drag Line Machine, used little, low price. Several Marion Dredges, 1 1/2 to 2-yd. capacity. If in want of machinery for drainage work or reclamation, write us. Address THE MALES CO., 82 Perin Bldg., Cincinnati, O.

FOR SALE

One single cylinder gasoline roller, nearly new; price low.

J. M. B. & SONS, care Manufacturers Record, Baltimore, Md.

FOR SALE

Two Macadam Steam Rollers, 10-ton size. Both in excellent condition. Low Prices. Write, A. G. HELD & CO., care of Manufacturers Record.

**CONTRACTORS' EQUIPMENT
FOR SALE**

1 Iroquois STEAM ROAD ROLLER, 10 tons.
1 New York STEAM ROAD ROLLER, 10 tons.
1 1/2-yd single-line Williams CLAM SHELL BUCKET, new.
1 600-gal. Etnayer SPRINKLING TANK. Rollers in good condition. CASH. FOGEL & CO., Hollidaysburg, Pa.

LOCOMOTIVE CRANE

FOR SALE—One industrial 8-wheel standard-gauge Locomotive Crane, 10-ton capacity, equally as good as new. Crane equipped for clamshell bucket, self-propelling, 50' steel boom. HENRY A. HITNER'S SONS COMPANY, Philadelphia, Pa.

LOCOMOTIVES

Freight and Passenger Equipment
RELAYING RAILS

R. K. PAPINY CO.

Pierce Bldg. ST. LOUIS, MO.

**DIAMOND CORE DRILL
FOR SALE**

A Sullivan Drill, at 1/3 cost, fully equipped (except carbons) for 1 3/8 and 1 1/2" cores.

JAMES M. HODGE, Big Stone Gap, Va.

Hoisting Engine

FOR SALE

Two three-drum tandem Lidgerwood Hoisting Engines, size 14x18, D. C., reverse link motion and friction drums, equally as good as new.

HENRY A. HITNER'S SONS CO.
PHILADELPHIA, PA.

FOR SALE

LOCOMOTIVES, CARS, RAILS, SWITCHES AND FROGS, STEAM SHOVELS, HOISTING ENGINES, DERRICKS, PILE DRIVERS, CONCRETE MIXERS, STONE CRUSHERS.

Maryland Equipment & Supply Co.
BALTIMORE, MD.

THE UNIVERSAL CONCRETE TIE AND FASTENER

The only composite tie on earth that has proven a success under five and six years actual traffic conditions of the heavy kind.

The only rail fastener that will hold rails in position and true to gauge indefinitely.

Fewer parts to look after than in any other tie. Practically nothing to work loose or get out of order.

No tie plates necessary; nothing to corrode except four screw spikes that are almost instantly removed and replaced without disturbing the tie, and that, too, after many years of use.

Patented everywhere. Investigate.

Write for information and testimonials and for our special prospectus.

UNIVERSAL CONCRETE TIE COMPANY

Whitney-Central Building

NEW ORLEANS

J. B. ELLIS, President

R. D. NEELY, Secretary

The Union Iron Works Co.
SELMA, ALA., U. S. A.

Manufacturers of
Engines, Boilers, Live Rolls
Locomotive Rebuilding a Specialty

LOGGING CARS**THE MAY & TURNER CO., ATLANTA, GA.**

MANUFACTURERS OF THE

BURROUGHS RAILWAY NUT LOCKS

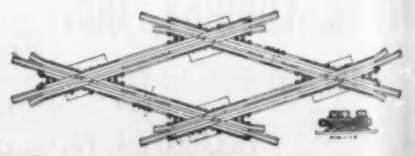
Dealers Relaying Steel Rails and Railway Supplies

**FROGS, SWITCHES, CROSSINGS**

Portable and Industrial Track

THE CINCINNATI FROG & SWITCH COMPANY

Manufacturers
CINCINNATI, OHIO



Announcement

The Pennsylvania Railroad has just sold us all the full passenger coaches it will release for some time to come.

We can now offer at interesting prices eighty Class Pf and fifty Class Pe coaches. The Pf class is strictly modern, suited for finest travel; quartered-oak finish, large windows, high-back seats; in regular service, running out of Philadelphia and other large terminals.

Tell us whether you want coaches for first or second class service and about how many you need. We shall be pleased to send full specifications and photographs, with prices.

HENRY LEVIS & CO., 26 So. 15TH ST., PHILADELPHIA

E. H. WILSON & COMPANY, ARCADE BLDG., PHILADELPHIA

Designed and built to reduce the cost of carrying logs to the mill. And does it!

You can't afford to let your competitor load, haul and unload his logs cheaper than you do.

The best is none too good, and the low-priced article may not be the cheapest.

Let us tell you all the reasons why.



RALEIGH IRON WORKS COMPANY

RALEIGH, N. C.

List of Surplus Contractors' Overhauled Equipment At Prices That Will Suit Purchaser

	LOCATION.
1 16 H. P. Port Huron traction engine.....	Newburgh, N. Y.
2 18 H. P. Huber special-length contractors' traction engines, Nos. 9020 and 9027.....	Newburgh, N. Y.
1 20 H. P. Huber traction engine, No. 8277.....	Pittsburgh, Pa.
6 Port Huron spreading car wagons.....	Pittsburgh, Pa.
1 10-ton Ostler steam roller.....	Pittsburgh, Pa.
1 10-ton Aveling-Porter steam roller.....	Pittsburgh, Pa.
1 3-ton Pioneer roller.....	Pittsburgh, Pa.
2 600-gal. Studebaker sprinkler wagons, 3" tires.....	Pittsburgh, Pa.
1 600-gal. Studebaker sprinkler wagon, 8½" tires.....	Pittsburgh, Pa.
1 Class B Lidgerwood-Crawford excavator with 60' boom, 1½ cu. yd. Page scraper bucket, in good working condition.....	Newburgh, N. Y.
1 Model G Marion steam shovel.....	Newburgh, N. Y.
1 Improved A Marion steam shovel.....	Pittsburgh, Pa.
1 18-ton H. K. Porter locomotive, shop 2190, 36" gauge.....	Branch, Pa.
2 22 and 13x16 Imperial X-2 belted air compressors as good as new, with 8" unloaders for same complete.....	Elmsford, N. Y.
1 16x10x14 Imperial X-2 belted air compressor.....	Elmsford, N. Y.
1 30 H. P. straight-line Ingersoll compressor, No. 379.....	Branch, Pa.
2 1-14-200 H. P., 514 R. P. M., 2200 volts, form M, 3-phase, 60-cycle G. E. motors, complete with all switchboards and indicating apparatus.....	Elmsford, N. Y.
1 10-100 H. P., 720 R. P. M., form K, 2200 volts, 3-phase, 60-cycle G. E. motor, complete with all switchboards and indicating apparatus.....	Elmsford, N. Y.
1 Brush dynamo, 1200 C. P., 16 arc lights.....	Branch, Pa.
1 100 H. P. 60 E Erie Economic boiler.....	Pittsburgh, Pa.
1 50 H. P. horizontal boiler, 4' 6" dia., 14' long, 54 2½" tubes.....	Pittsburgh, Pa.
1 40 H. P. Nagel boiler with engine mounted.....	Pittsburgh, Pa.
1 20 H. P. Porter-Donaldson Economic boiler.....	Pittsburgh, Pa.
1 5 H. P. engine.....	Pittsburgh, Pa.
1 50 H. P. Porter-Donaldson side-valve engine, band wheel 16" face, 16" dia.....	Pittsburgh, Pa.
1 40 H. P. Atlas engine, band wheel 16" face, 16" dia.....	Pittsburgh, Pa.
1 10 H. P. Erie engine, 10x16.....	Pittsburgh, Pa.

	LOCATION.
1 50 H. P. vertical boiler mounted on trucks, submerged tubes.....	Pittsburgh, Pa.
1 10 H. P. vertical engine, Nagel, No. 12711.....	Pittsburgh, Pa.
1 100 H. P. single-cylinder 13x18 center-crank high-speed engine, 78x20½ flywheel, made at Erie Engine Works, No. 10404, known as No. 13 C. C.....	Newburgh, N. Y.
1 Epping-Carpenter No. 6 single-plunger pump, No. 1465, 10x6x12, in good order.....	Pittsburgh, Pa.
1 Wilson-Snyder duplex pump No. 1866, 10x6x15.....	Pittsburgh, Pa.
1 No. 6 Marsh feed pump, 5x3x6.....	Pittsburgh, Pa.
1 Worthington duplex pump, 6x4x6.....	Pittsburgh, Pa.
1 Wilson-Snyder pump, 4x2x7.....	Pittsburgh, Pa.
1 Epping-Carpenter pump, 4x6x2.....	Pittsburgh, Pa.
1 3x2x3 Blake feed pump.....	Newburgh, N. Y.
1 Fairbanks type A reciprocating pump, gasoline.....	Pittsburgh, Pa.
1 Fairbanks 3"x2½" centrifugal pump, gasoline.....	Pittsburgh, Pa.
1 100 H. P. Cochran feed-water heater, 6" exhaust.....	Newburgh, N. Y.
1 No. 4 B Gates crusher, with extra head, shaft, excen-trics.....	Pittsburgh, Pa.
1 No. 5 McCully gyratory crusher.....	Newburgh, N. Y.
1 No. 3 shorthead McCully gyratory crusher.....	Newburgh, N. Y.
1 40"x14" rotary screen, dust jackets, ¼" meshplates, 1" 1½", 2½".....	Newburgh, N. Y.
1 No. 6 belt elevator, 66" center to center, 18" buckets.....	Newburgh, N. Y.
1 No. 4 Ransome concrete mixer, No. 1960, 40 cu. ft. capacity, batch hopper, complete with engine.....	Newburgh, N. Y.
1 No. 3 Foote continuous mixer, with engine and boiler mounted.....	Pittsburgh, Pa.
Rock drills, air and steam, of all sizes, Ingersoll, Murphy, Dallett and Sullivan makes.....	Pittsburgh, Pa.
1 Freeze cutting table, practically new (16 cuts).....	Pittsburgh, Pa.
10,000 ft. 4", 5", 6" pipe, Dresser couplings.....	Elmsford, N. Y.
2000 ft. 2" screw pipe.....	Elmsford, N. Y.

Write to us for full particulars as to condition, location and prices.

BOOTH & FLINN, Limited

Department D

1942 FORBES STREET

PITTSBURGH, PA.

Georgia Car & Locomotive Co.

ATLANTA, GA.

LOCOMOTIVES, FREIGHT CARS, PASSENGER COACHES

LARGEST STOCK EQUIPMENT IN U. S.

RAILS LOCOMOTIVES

RELAY RAILS

LOCOMOTIVES—Narrow and Standard Gauge. 150 Locomotives at our shops 6 to 80 tons. Freight and Passenger Cars.

Largest Stock Locomotives
in United States

Southern Iron & Equipment Co.
ATLANTA, GA.

FOR SALE

RELAYING STEEL RAILS

About 1000 tons, 60 lbs. per yd., with plates
Middle West Delivery.

About 600 tons, 56 lbs. per yd., with plates
About 3000 tons, 60 lbs. per yd., with plates
About 1500 tons, 65 lbs. per yd., with plates
About 300 tons, 70 lbs. per yd., with plates
New York Delivery.

NEW FIRST QUALITY STEEL RAILS,
ALL WEIGHTS

THE STEEL RAIL SUPPLY COMPANY,
No. 2 Reclor Street, - - NEW YORK, N. Y.

RELAYING RAILS

Railway and Contractors' Equipment.
Second-hand Pipe.
Bought and Sold.

L. B. FOSTER COMPANY
PITTSBURG, PA.

RAILS NEW AND RELAYING RAILS RAILROAD BRIDGES AND EQUIPMENT

HENRY LEVIS & CO.

26 South Fifteenth Street

PHILADELPHIA



THE MARTIN PATENT NUT LOCK

This is the only Nut Lock that is guaranteed to be absolute under all conditions. It can be used in any place where there is a bolt. It is reasonable in price. Made for steel or for wood. Sizes 3-16" and upwards. Write for sample and prices.

The Universal Nut & Bolt Lock Co., 1029-1035 Saratoga St.
NEWPORT, KY.

Passenger Coaches

Five, from 50' to 52' body. Seat 60 to 64 persons. Partitions for separation of the races. High-back seats. Good-sized windows.

Also four cheaper coaches, 48' body, seating 62 persons.
Specifications on request.

E. H. WILSON & COMPANY
ARCADE BUILDING
PHILADELPHIA

RELAYING RAILS

ALL WEIGHTS
SHIPMENT FROM STOCK
Write or Wire for Prices.

Harry Benjamin Equipment Co.
727-728 Central Nat. Bank Bldg., St. Louis, Mo.

RELAYING RAILS

50 lb. Rails 125 tons with
angle bars uniform section
and drilling.

E. C. SHERWOOD, 50 Church St., New York

RAILS

Pipe, Casing, Tubing and Rods, All Sizes,
New and Second Hand

G. MATHES IRON & METAL CO.
General Offices—ST. LOUIS, MO.

J. E. FRANKS

Room 729 Candler Bldg.,
ATLANTA, GA.

RAILS, CARS AND LOCOMOTIVES
FROGS, SWITCHES, Etc.

Relaying Steel Rails

(20-lb., 30-lb., 40-lb., 56-lb., and 60-lb.)
Advantageously located for Southern delivery; also other weights heavy section RELAYING RAILS, in different sections of the country; and NEW STEEL RAILS, all weights. We handle only first-class Relaying Rails, and do not select them from scrap. We buy Rails fit to relay, and pay spot cash.

ROBINSON & ORR, Pittsburgh, Pa.
Low Prices on New FROGS and SWITCHES.

New Light Rail

12 TO 45 LB.

Cheaper than Relaying Rail
"ASK US"

RELAYING RAIL

56 TO 85-lb. Sections

Frogs, Switches, Nuts, Bolts, Spikes

Geo. M. Newhall Engineering Co.
PHILADELPHIA—NEW YORK

LIGHT STEEL RAILS

12, 16, 20, 25, 30
lbs. per yard.

SPICES AND ANGLE JOINTS
SPIKES FOR ALL SECTION RAILS

Shipments from stock. Manufactured by
THE WEST VIRGINIA RAIL CO.
Mills and General Office, Huntington, W. Va.
The Joseph Schonthal Iron Co., Columbus,
Ohio, General Sales Agent.

Sweet's Steel Co.

WILLIAMSPORT, PA.

Manufacturers of

Light Steel Rails

12, 16, 20, 25, 30, 35 and 40-lb. Sections. We
Also Spices, Bolts, Nuts and Spikes.
Our Rails are first quality. A. S. C. E.
Section, carefully inspected.

Prompt Shipments from Stock

Bedstead Angles and Special Shapes

RAILS AND LOCOMOTIVES

FOR SALE

For sale and at Norfolk, Va., for immediate
delivery, 250 gross tons 50-pound Steel T
Relaying Rail, with spices, in first-class condition.

One 27-ton Climax Geared 36-gauge Locomotive, fair condition.

One 16-ton Standard-gauge Pony Type Locomotive, in good condition. Apply

JOHN D. WESTBROOK, INC.,
Norfolk, Va.

Equipment Bargains

Flat, Box, Stock, Caboose and Logging
Cars; Combination and Passenger Coaches;
Rails, Castings, Gearing, etc.; Bogle Wheels
for any Gauge of Track; Machinery Repaired,
Locomotive, Marine, Stationary, Sawmill, etc.

15 Locomotives, 36 and standard gauges.

1 Bucyrus Steam Shovel.

1 Vulcan Concrete Mixer.

2 Centrifugal Pumps.

5 Stationary Engines, different sizes, several

Boilers.

2 Sawmills.

2 Skidding Machines.

1 Planer.

Other Machinery, Logging Cars and Rail.

Prompt Dispatch and Moderate Charges.

J. H. MACLEARY, SUFFOLK, VA.

THREE LOGGING LOCOMOTIVES

FOR SALE

Steam skidder, timber carts and complete 40,000 capacity circular mill plant. Ask for itemized list.

AUGUSTA LUMBER CO., Augusta, Ga.



FOR SALE

8-54-ton 10-wheelers, 1-40-ton 8-wheeler,
1-32-ton 4-wheel switcher.

Passed Government Inspection.

BALDWIN EQUIPMENT & SUPPLY CO.

904 Fisher Bldg., CHICAGO, ILL.

STEEL PILING

Nearly all lengths and makes; very cheap.
Before you buy or sell

Rails, Locomotives, Cars, Equipment, Machinery

WRITE

ZELNICKER
WALTER A. ZELNICKER SUPPLY COMPANY
in St. Louis

March Bulletin will be sent on request.

FOR SALE

Several miles standard section relaying
rails, also light rails in stock. 18-ton Shay
geared locomotive and other equipment. Address.

NATIONAL IRON & STEEL CO.,
Houston, Texas.

Locomotives and Rails

FOR SALE

SPECIAL

12 miles of Steel Relaying Rails at McComb
City, Miss.

At our Shops in Birmingham:

Two 18x24 Pittsburg 10-wheel Locomotives
with 44" wheel centers; short wheel base.

One 30-ton standard-gauge Shay; excellent
condition; thoroughly overhauled.

Also fifty other standard and 3-ft.-gauge Locomotives from 8 to 75 tons in weight.
Write us for prices and terms.

BIRMINGHAM RAIL & LOCOMOTIVE CO.,
Birmingham, Ala.

H. W. PICKETT CO., Inc.

1107-8 Harrison Building
PHILADELPHIA, PA.

REPRESENTING

Vulcan Iron Works, Locomotives
W. J. Oliver Mfg. Co., Dump Cars
George M. Newhall Engr. Co.,
Industrial Locomotive Cranes
National Hoisting Engine Co.,
Hoisting and Swinging Engines
Austin Cube Mixer Co.
Chicago Cube Tilling Mixers

New Light Rail Re-laying Rail

AND A LIMITED AMOUNT OF STRICTLY
FIRST CLASS SECOND-HAND
EQUIPMENT

RELAYING RAILS

1000 tons first-class 40-lb. with angles.
500 tons first-class 60-lb. 400 tons first-class
70-lb. Ready for immediate shipment.

HYDE BROTHERS & COMPANY, Pittsburgh, Pa.

A. S. C. E. Sections

LIGHT STEEL RAILS

PROMPT DELIVERY

8, 12, 16, 20, 25, 30, 35, 40 pounds per yard.
With Spices and Spikes.

UNITED STATES RAIL CO.

Manufacturers, Cumberland, Md.
Certificates of Inspection by Hildreth & Co.,
Inspecting Engineers of New York City, assuring absolutely first quality, furnished free of cost.

RELAYING RAILS

IRON AND STEEL SCRAP

Ohio Iron & Metal Co.

Main Office—First National Bank Bldg., Chicago, Ill.

Second-Hand Bridges BOUGHT AND SOLD



We handle second-hand bridges, floor beams,
I-beams, channels, tees, angles, etc. Send us
your specifications. A large stock of relaying
rails, subject to inspection on hand.

THE HYMAN-MICHAELS CO., Chicago, Ill.

Successors to BLOCK-POLLAK IRON CO., Chicago.

Telephone Number Central 4799

OLIVER DUMP & SPREADER CARS

(DUMPED BY AIR OR HAND)

Only AIR DUMP CAR under absolute control of operator. Can be brought back to upright position, after passing center of gravity, before entire contents of car have been unloaded. This admits of equal distribution of material on both sides of track. Write THE WM. J. OLIVER MFG. CO., KNOXVILLE, TENN., AND 50 CHURCH ST., NEW YORK, N. Y.

SPECIAL

700 TONS

45-LB.

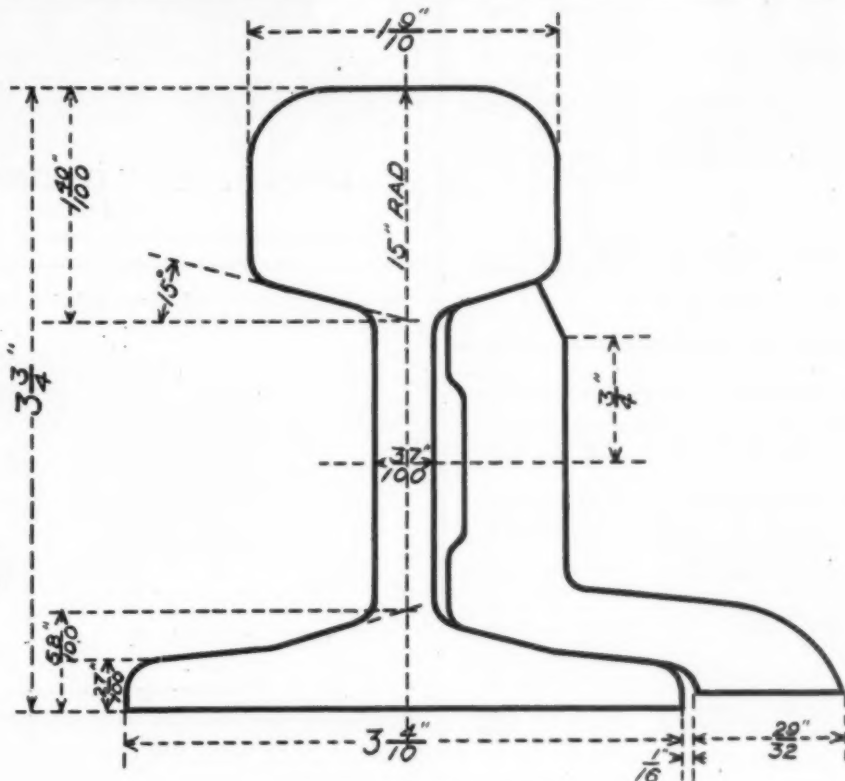
NEW RAIL

SAME AS TRACING

CHEAP AS

Relaying Rail.

WRITE FOR PRICE



ALL SECTIONS

NEW

AND

RELAYING RAIL

FROGS

SWITCHES

Nuts and Bolts

Spikes

NEW 45-LB. RAIL

GEO. M. NEWHALL ENGINEERING CO.

PHILADELPHIA and NEW YORK

ESTABLISHED 1866

INCORPORATED 1905

Plates, Steel Castings, Bridge and Structural Work

BOLTS

SPIKES

BARS

SHAPES

Nickel-Chromium
RAILS

PIG IRON

Sales Agents:

PENNA. STEEL CO.
MARYLAND STEEL CO.
CENTRAL IRON & STEEL CO.
PULASKI IRON CO.
MOUNT SAVAGE FIRE BRICK
VIRGINIA IRON, COAL & COKE CO.

Open Hearth
and
Bessemer

AGENTS
PENNA. STEEL CO.

AGENTS
MARYLAND STEEL CO.

GIRDER and TEE RAILS, FROGS, SWITCHES, Etc.

R. C. HOFFMAN & CO., Inc.

BALTIMORE, MD.

WRITE US FOR PRICES

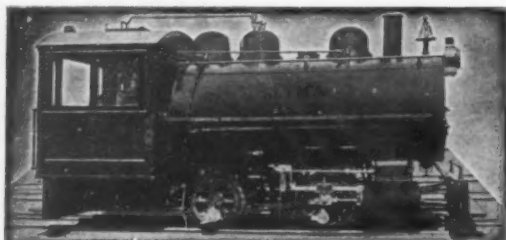
HEISLER GEARED LOCOMOTIVES

Send for Detailed Descriptive Catalog M. B.

Heisler Locomotive Works

ERIE, PENNSYLVANIA, U. S. A.

Especially adapted for heavy hauling on steep grades, sharp curves and uneven tracks. For logging, switching and pulling on main lines, mills, furnaces and industrial purposes.

LIMA LOCOMOTIVES**CONTRACTORS' DINKEYS**

We have recently placed on the market one of the most improved types of Dinkeys.

If interested, write us for catalog "O."

36" and 50 1/2" gauge in stock for immediate delivery.

BRANCH OFFICES:

New York:
50 Church Street

Chicago:
1122-1123 McCormick Bldg.

New Orleans:
Woodward-Wight Co., Ltd

THE LIMA LOCOMOTIVE & MACHINE CO.

110 Third Street,
LIMA, OHIO

**DAVENPORT LOCOMOTIVE WORKS**

DAVENPORT, IOWA

BRANCHES:

Chicago 12 and 14 So.
Canal Street.

New York, 80 Church
Street.

St. Louis, 654 Pierce
Building.

Minneapolis, 107 Third
Avenue N.

Seattle, 613 - 13 - 17
Western Avenue.

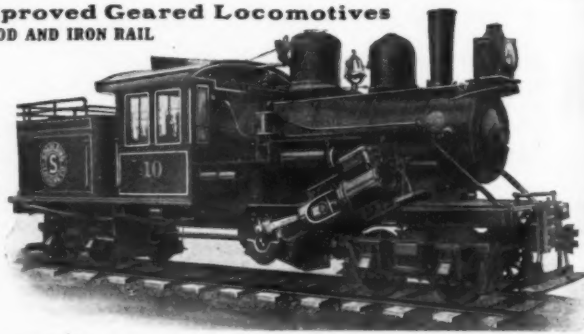
F. H. Hopkins & Co.,
Montreal, Que., Can-
adian Representative.

**Climax Improved Geared Locomotives
FOR WOOD AND IRON RAIL**

Successfully oper-
ated on steep grades
and sharp curves.
Any weight or
gauge.

Power in center of
each axle.

Get Catalogue G.



CLIMAX MANUFACTURING CO.

C. T. Patterson Co., New Orleans.

311 West Main St., CORY, PA.

G. M. Dilley & Son, Palestine, Tex.

THE WEIR FROG CO.

Manufacturers of

Frogs, Switches, Crossings Rail Braces etc

CINCINNATI, O.

Steel Cross Ties

Steel Switch Ties

Steel Mine Ties

STEEL CROSS TIES installed on Bessemer & Lake Erie Railroad in 1905, over which 80,000,000 tons of material have been hauled, are in excellent condition today. This, with other severe tests to which our ties have been subjected, lead us to expect a life of 21 years from them. They are then worth 35% to 40% of first cost as scrap. We solicit a careful investigation. Let us quote on your requirements.

CARNEGIE STEEL COMPANY

General Offices: Pittsburgh, Pa.

Forty-four Million Pounds

OF

DU PONT

Red Cross Low Freezing Dynamite

Were used in 1911, four years after it was first put on the market. Many of the largest quarries and metal mines in the country

Use It Exclusively

because it does the most work for the least money.

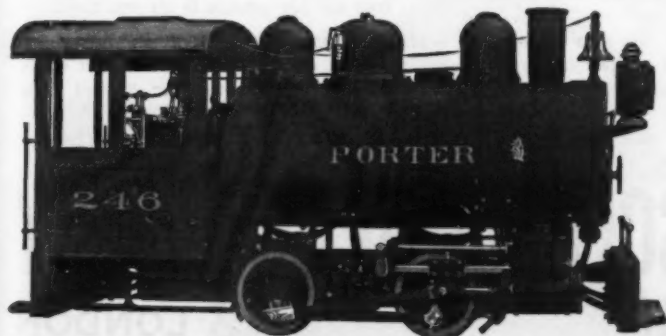
Ask for "High Explosives" Catalog No. 125

E. I. du Pont de Nemours Powder Co.

Established 1802

WILMINGTON, DEL.

"PORTER LOCOMOTIVES"



STEAM AND COMPRESSED AIR

For all Gauges of Track and Every Variety of Service, including Mine, Furnace, Lumber, Plantation, Industrial and Contractors' use. Locomotives 36" and 56 1/2" Gauge on hand for immediate delivery.

Tenth Edition Catalog mailed to intending purchaser.

H. K. PORTER COMPANY, 412 Wood St. PITTSBURGH, PA.



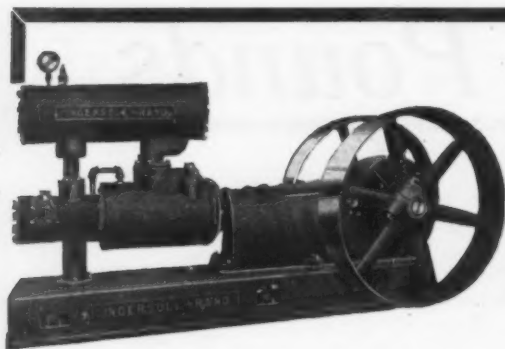
LOCOMOTIVES

Of Standard and Special Designs, suitable for all classes of service. Broad and Narrow Gauge.

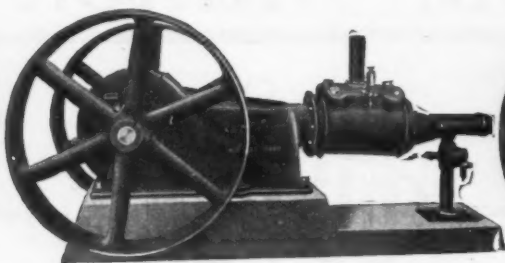
Norfolk Representative
Southern Supply Co.

N. Y. Office
60 Church St.

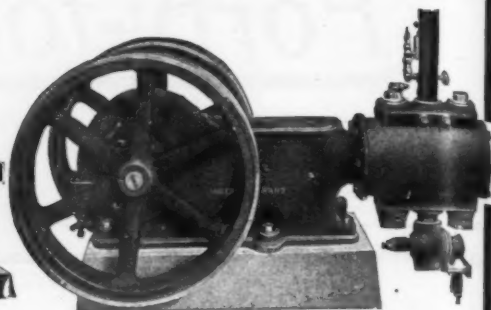
VULCAN IRON WORKS, Wilkes-Barre, Pa.



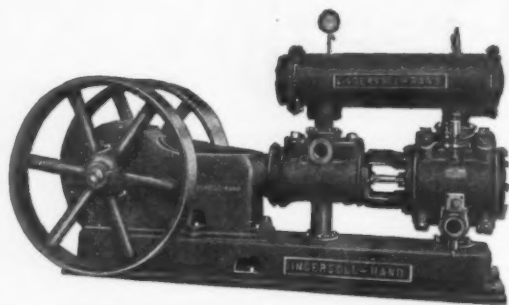
Class "NE-2-S" Two Stage Single-Acting.



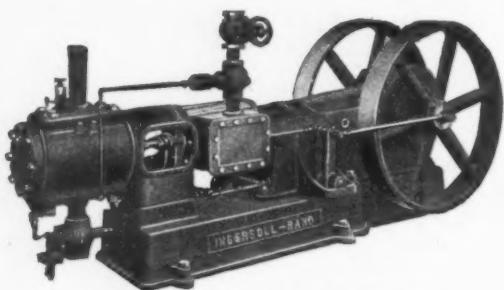
Standard Class "NE-1" in Larger Sizes.



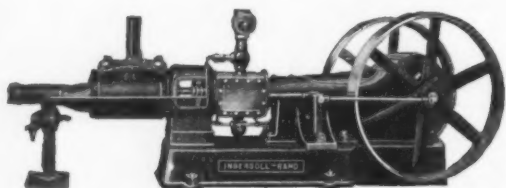
Standard Class "NE-1" in Smaller Sizes.



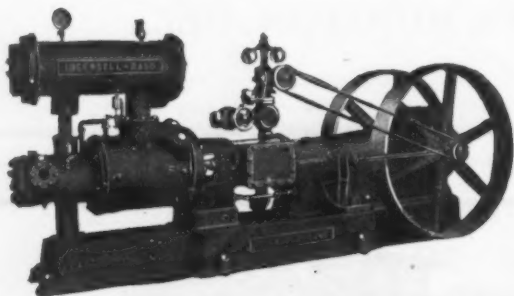
Class "NE-2" Two Stage Double-Acting.



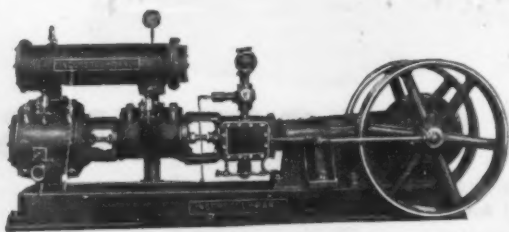
Standard Class "NF-1" in Smaller Sizes.



Standard Class "NF-1" in Larger Sizes.



Class "NF-2-S" Two Stage Single-Acting.



Class "NF-2" Two Stage Double-Acting.

Which Will Be the More Profitable— A Cheap Air Compressor, or Cheap Compressed Air?

When you come to buy a compressor, ask yourself this question and get an honest answer.

A comparatively small difference in first cost between two machines apparently very similar usually marks a much more important difference in real value.

A low price will mean an initial saving, but an unnecessarily high, and a steadily increasing, operating cost.

A fair price will cover a design and construction providing those essentials which stand for a low operating cost maintained almost indefinitely.

A low price buys a cheap air compressor. A fair price buys cheap compressed air. Which is the more desirable? A small initial saving, realized once, or a small saving multiplied every day the machine is in operation?

Particularly important is it to make this nice distinction in the case of air compressors of small or moderate capacities—say, up to 650 cubic feet per minute.

Here, too often, the feeling is that no small compressor is efficient, anyway; but compressed air is needed, and the cheapest machine will do well enough—probably as good as any.

This feeling on the part of buyers is the result of exactly the same feeling on the part of most compressor builders. These builders themselves have had no great faith in their own small compressors—their interest lay in their larger machines.

The line of small compressors here pictured—the "NE" and "NF" line—shows the importance which we (the oldest and largest builders of air compressors) attach to the business of the small user of compressed air.

The small user appreciates economy as much as the big user—probably more. And here are the compressors with which he can realize the economies he seeks.

We want to impress upon you the fact that these "NE" and "NF" Compressors are not mere cheap make-shifts run off to catch the small compressor business. They are distinctly new types developed for the specific purpose of making compressed air in small volumes at low cost.

They are splendid, high-class little machines which we are able to sell at a very moderate price, because we build them in large quantities.

We mastered the problem of "quantity production" in building Ingersoll-Rand Rock Drills. And we have applied the same methods to building these small air compressors.

These methods sacrifice neither design, nor materials, nor workmanship. The saving by which you benefit comes from lowered shop costs realized by automatic machines, and from lowered materials cost realized by large volume buying.

The combination of correct design, superior materials, special materials treatment and high-class construction results in the economy of power and low up-keep cost which mean a low cost of producing compressed air, even in these small volumes.

These are pre-eminently the compressors you want for your shop, foundry, mill, stone-yard, quarry, contract job, or other work where from 40 to 650 cubic feet of free air per minute is all you need.

The story of "NE" and "NF" compressors is told in descriptive bulletins sent on request. Ask us for our "Small Compressor Series."

INGERSOLL-RAND COMPANY

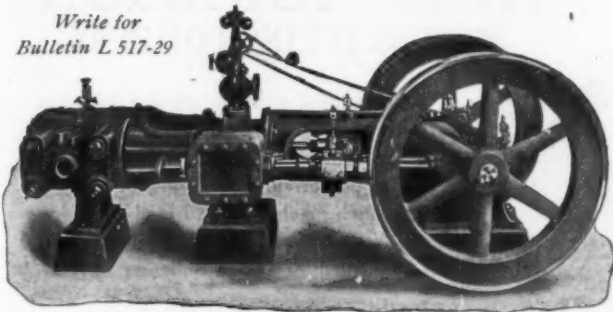
NEW YORK

LONDON

Offices in All Principal Cities of the World

The Laidlaw-Dunn-Gordon Co.

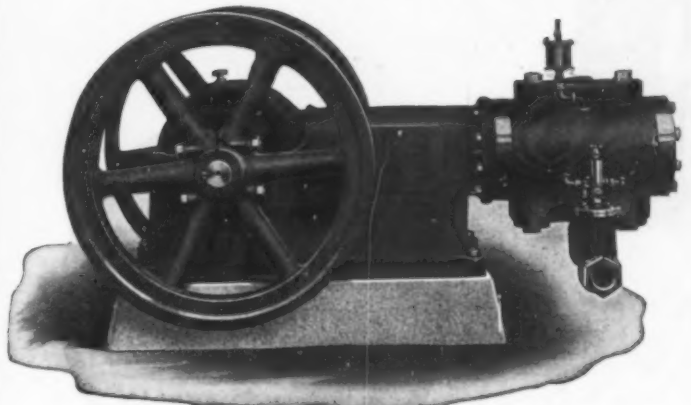
Write for
Bulletin L 517-29



New York **AIR COMPRESSORS** Works,
115 Broadway FOR EVERY SERVICE Cincinnati
L 118.1

THE ORIGINAL SELF-OILING COMPRESSOR BLAISDELL AIR COMPRESSORS

All types, all sizes, for every service.



The following are a few

Blaisdell Strong Points

Lubrication is automatic and positive, starting and stopping with the machine without attention. Simple, effective, efficient. Frame entirely enclosed, dust-proof construction. Removable covers on frame allow easy access to all parts. Only best material used in the Blaisdell and each part thoroughly tested.

We also manufacture automatic sewage ejectors for buildings and municipalities, gas compressors, and vacuum cleaning systems.

Catalogue on request.

BLAISDELL MACHINERY COMPANY

Home Office and Works: BRADFORD, PENNA.

New York	Seattle	Denver	Cleveland	Birmingham
Philadelphia	Salt Lake City	Kansas City	New Orleans	Greenville
Washington	Boston	San Francisco	St. Louis	Dallas, Tex.
	Pittsburgh	Chicago	Baltimore	



WICKES BROTHERS MURPHY LITTLE CHAMPION ROCK DRILLS

FOR
AIR OR STEAM

WICKES BROTHERS

443 CLAREMONT AVENUE
JERSEY CITY, N. J.

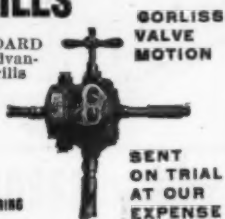
AGENCIES

Geo. S. Githens Co.	Boston, Mass.
J. M. Alexander	Atlanta, Ga.
Moore-Handly Co.	Birmingham, Ala.
Thos. L. Barret	Louisville, Ky.
Smith Drill and Mch'y Co	Chattanooga, Tenn.
Colonial Supply Co.	Pittsburgh, Pa.



Thor PISTON AIR DRILLS

Represent the highest STANDARD in AIR TOOLS. The many advantageous features which these drills possess result in the greatest efficiency and have caused them to become the most popular machines of their kind on the market.



INDEPENDENT PNEUMATIC TOOL CO.

Manufacturers of

PISTON AIR DRILLS, PLUG ROLLING, REAMING, TAPPING AND WOOD BORING MACHINES, GRINDERS, AND RIVETING, CHIPPING AND CALKING HAMMERS

CHICAGO

NEW YORK

PITTSBURGH

SAN FRANCISCO

GORLISS
VALVE
MOTION

SENT
ON TRIAL
AT OUR
EXPENSE

"Peerless" AIR COMPRESSORS

AMERICAN COMPRESSOR & PUMP CO.
11 S. FRONT ST., BALTIMORE, MD.

AIR COMPRESSORS IN ALL SIZES

FOR EVERY REQUIREMENT

AMERICAN AIR COMPRESSOR WORKS,

26 Cortlandt St., New York

Agents, Southwestern—REEVES & SKINNER Mch'y Co., St. Louis, Mo. Catalogue Gratis

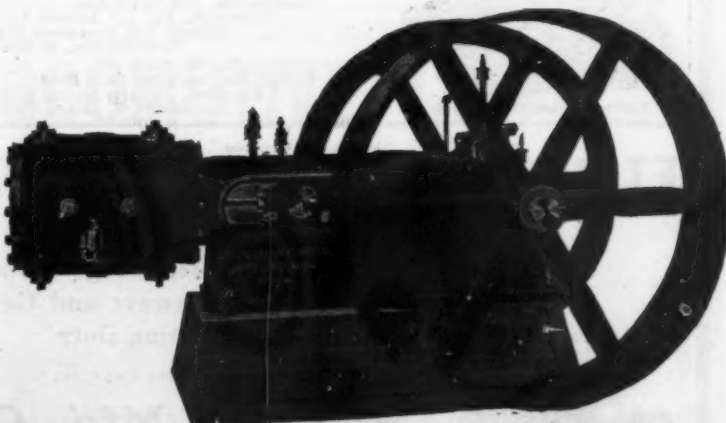
CHICAGO PNEUMATIC AIR COMPRESSORS STEAM—BELT—ELECTRIC and GASOLINE DRIVEN

For Every Pressure and Every Purpose

THE CHICAGO PNEUMATIC GASOLINE-DRIVEN is self-contained and commends itself for the lower cost of plant and equipment, requiring no boiler attachment or coal supply; for its economy of operation and supervision, and its minimum of weight and ready portability.

This type can be furnished MOUNTED with Air Receiver, on substantial running gear and large wheels, representing the most advanced and complete ideas in a portable compressor outfit. Manufactured by

CHICAGO PNEUMATIC TOOL COMPANY
CHICAGO NEW YORK



WE CAN SAVE YOU MONEY

We Invite Your Inquiries

A STRICTLY HIGH-GRADE LINE OF AIR COMPRESSORS CONDENSERS AND PUMPING MACHINERY

MANUFACTURED BY THE

Union Steam Pump Co.

BATTLE CREEK, MICH.

"AMERICAN"



This Building Contractors' Engine with two Reversible Friction Drums will operate the Boom and Hoisting Lines of a Derrick, a Material Elevator, Circular Saw, Mixer, Pump, etc.—all on one job if necessary.

Pays for Itself on One Good Job.

"The 'AMERICAN' Builders' Engine is one of the biggest money-savers a contractor can own."

W. H. Werner, Shreveport, La.

Write for information and prices.

American Hoist & Derrick Co., St. Paul, Minn.
Please send information and prices on "American" Builders' Engines.

AMERICAN HOIST & DERRICK CO.

ST. PAUL, U. S. A.

Chicago
New York
Pittsburg

New Orleans
San Francisco
Los Angeles

Seattle
Portland
Spokane

St. Louis
Denver
Winnipeg

Vancouver
Edmonton
Calgary

15

CLYDE Hoisting Engines and Derricks

are built for all purposes and heavy, efficient work. The engines have steel gears and ratchets. Shafting is extra heavy, with long bearings. Connecting rods have solid ends. Frictions are positive. Steel ratchet rings are removable. Winch heads are large and smooth. Boilers have large heating surface and securely anchored.

Large stocks of standard sizes on hand for quick shipment.

Ask for Catalogue

Clyde Iron Works

DULUTH, MINN.

CHICAGO, ILL., 318-19 Fisher Bldg.

NEW YORK, 30 Church Street

NEW ORLEANS, 421 Carondelet St.

SAVANNAH,
Germania
Bank Bldg.

HOUSTON,
1315 Carter
Bldg.



MEAD-MORRISON MANUFACTURING COMPANY



For every variety of service there is a Mead-Morrison Hoisting Engine, for dock, railroad or bridge construction; for pile driving, quarrying or running trench machines, the Mead-Morrison "Standard" Hoisting Engine is unequalled. Correspondence invited.

General Office and Works,
Cambridge, Mass.

NEW YORK, 149 Broadway; CHICAGO, Monadnock Bldg.; BALTIMORE, 821 Equitable Bldg.; PITTSBURG, 108 Parkway, N. E.; SAN FRANCISCO, Metropolis Bank Bldg.; NEW ORLEANS, 110 North Peters Street; MONTREAL, 286 St. James Street.



WILLIAMSON CONTRACTORS' HOISTS
WITH THE PERFECT DRUM MECHANISM
STEAM AND ELECTRIC
SEND FOR CATALOGUE
WILLIAMSON ENGINEERING COMPANY
AND FOUNDERS
PHILADELPHIA, PA.

WE MANUFACTURE HOISTING ENGINES

for all purposes and sell them at the lowest possible price. All engines built on Steel Frames and with Steel Drum Barrels. Also

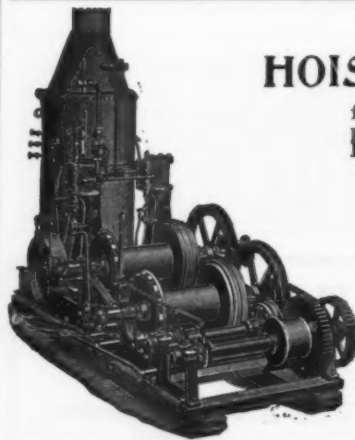
Derrick Cars, Derrick Irons, Hand Powers, Blocks and Sheaves

We make a speciality of

Double and Single Platform Elevators

for handling brick and mortar. These elevators are adapted for any height building. Write for Catalogue.

THE JOHN F. BYERS MACHINE CO.
RAVENNA, OHIO



STROUDSBURG HOISTING ENGINES

STEAM AND ELECTRIC

For all kinds of Hoisting and Haulage Work

Stroudsburg Engine Works, STROUDSBURG, PA.

BRANCH OFFICES:

Philadelphia, 1710 Market St.
Altoona, Pa., 1114 Tenth Ave.
Pittsburgh, Pa., 1151 Liberty Ave.
Chicago, Ill., Monadnock Bldg.
Portland, Ore., 65 First St.
New Orleans, La., 231 Canal St.
Norfolk, Va., Seaboard Bank Bldg.
Richmond, Va., 1135 Mutual Bldg.
Cincinnati, O., 3d and Vine Sts.



Up-to-date Derrick Engine.

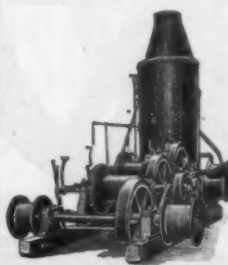
FLORY HOISTING ENGINES

STEAM AND ELECTRIC

For Contractors, Bridge Building, Dredging, Cableways and General Hoisting Duty

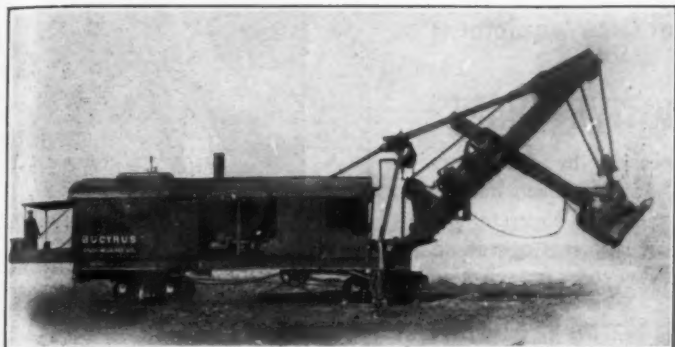
WRITE FOR 1910 CATALOG

S. Flory Mfg. Co.
BANGOR, PA.



WHEN THE DIGGING IS FAIR,
FEW SHOVELS WILL FAIL

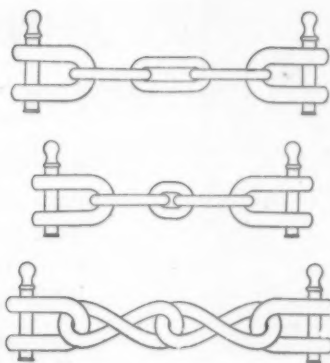
BUT YOU NEED A
BUCYRUS
IN ROCK



BUCYRUS STEAM SHOVELS
ARE BUILT TO STAY

WE ALSO BUILD
DRAG-LINE EXCAVATORS
RIVER, HARBOR AND DITCHING DREDGES
PLACER DREDGES
RAILWAY WRECKING CRANES
LOCO PILE DRIVERS
UNLOADING FLOWS

BUCYRUS COMPANY, P. O. BOX N.
So. Milwaukee, Wis.



Are you interested in Car Couplings? The above cut is a few of the styles we manufacture. If you want anything of special design send us a rough pencil sketch, giving dimensions, etc., and we will submit prices, based on furnishing a strictly hand forged article.

One good feature about all our work is—we never fail to stamp our products "W. C. & I. Co.," a guarantee of quality.

Our specialty:— Steam Shovel, Dredge, Crane, Quarry Vessel and other High Grade Hand Made Tested Chains.

Weimer Chain & Iron Company

Lebanon, Pa., U. S. A.

PATTEN HOISTS

Driven by Electric
Motor, Gasoline or
Steam Engine.

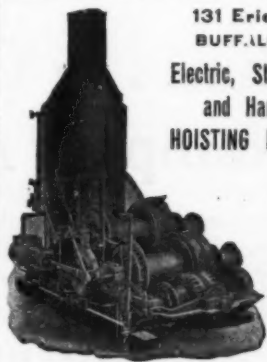


Postal Brings Catalogue.
Patten Manufacturing Co., Chattanooga, Tenn.

The Contractors' Plant Mfg. Co.

131 Erie Street
BUFFALO, N. Y.

Electric, Steam, Horse
and Hand-Power
HOISTING MACHINERY



Derricks
Steel, Wood
or Pipe.
Jib-Cranes
Derrick
Irons and
Contractors'
Supplies.
Have large
stock on
hand.

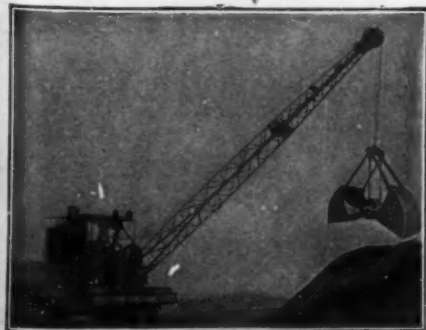
W. E. Austin Co., Atlanta, Ga. Southern Representative

We Manufacture Locomotive Cranes Only
OHIO LOCOMOTIVE CRANE CO.

BUCYRUS, OHIO

Southern Office—Paul-Gale-Gerwood Bldg., - - - Norfolk, Va.

STEAM AND ELECTRIC LOCOMOTIVE CRANES



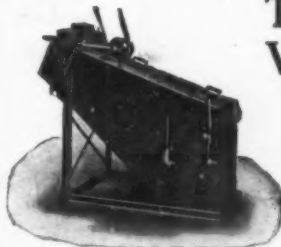
When you want the
very best you want
the "Exeter." Es-
pecially adapted for
rapid work, handling
loose and bulky ma-
terial.

Send for Booklet.

**The Exeter
Machine Works**
PITTSBURGH, PA.

A Record that has Never Been Equalled

THE NEW JEFFREY VIBRATING SCREEN



Write today for Catalog 69
and complete information.

gives the closest separation ever ob-
tained from any type of Vibrating
Screen, only 2% to 5% of fines remain-
ing in the tailings.

The feed is adjustable for a range
wide enough to suit the capacity of
the machine for any material.

Sample tests made at our factory
free of charge.

JEFFREY MFG. CO.

COLUMBUS, O.

MACHINE TOOLS SHAW ELECTRIC TRAVELING CRANES SUPPLIES MACHINISTS, MILL and ENGINEERS

ENGINEERING SPECIALTIES OF ALL KINDS

MANUFACTURED BY
The Shaw Electric Crane Co.

The Ashcroft Mfg. Co.

The Consolidated Safety Valve Co.

The Hancock Inspirator Co.

The Hayden & Derby Mfg. Co.

OWNED AND OPERATED BY

MANNING, MAXWELL & MOORE, Inc.

85-87-89 Liberty Street, New York
Los Angeles

Chicago
Detroit
Indianapolis

Philadelphia
Boston
Milwaukee

Pittsburgh
St. Louis
Buffalo

Cleveland
Yokohama, Japan
San Francisco



To Be a Successful Contractor Today

you must work with modern equipment. This consists of machines that will do your work quicker and at less cost than it can be done by the old methods. This modern equipment includes a

BROWNHOIST LOCOMOTIVE CRANE

This crane is considered a necessity by contractors who use it. It is worked from start to finish on any contract, excavating, driving piles, placing concrete, and handling all heavy materials. These different operations are shown here. The crane is also used for switching purposes.

Our thirty years' experience has enabled us to perfect the Brownhoist crane so that it will undergo severe working tests. Our records show that the crane has worked 24 hours every day for months at a time. Ask the man who has one.

Our catalog is of interest to contractors. Send for it.

**THE BROWN
HOISTING MACHINERY CO.
CLEVELAND, OHIO**

NEW YORK
PITTSBURGH

Branch Offices:

CHICAGO
SAN FRANCISCO

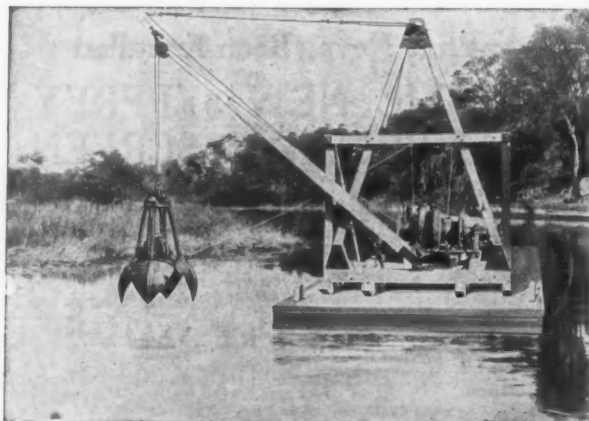


Illustration No. A1374.

Six Machines in One— Unexampled Adaptability

No other digging machinery can equal HAYWARD DIGGING MACHINERY in ease of handling and in durability—but most of all, none other can compare with it in adaptability. It can be used as:

An ordinary **Skid Machine**.

It can be mounted on a scow and used as a **Dredge**.

At slight additional cost, it can be mounted on wheels of wide gauge and used as a **Traveling Derrick**.

The smaller sizes can be mounted on a flat car and used as a **Traveling Excavator**.

The smaller sizes can be mounted and operated on a flat wheel wagon and carted to any desired point—while the horses can be utilized for pulling the machine forward while operating or not, as preferred.

And finally, it can be placed on a dock or other permanent position and used as a **Regular Derrick** for rehandling materials.

Can such a record of usefulness be duplicated anywhere in one machine?

In the illustrations a HAYWARD MACHINE is shown mounted on a scow and used as a dredge. Also as used for land work as a Skid Machine.

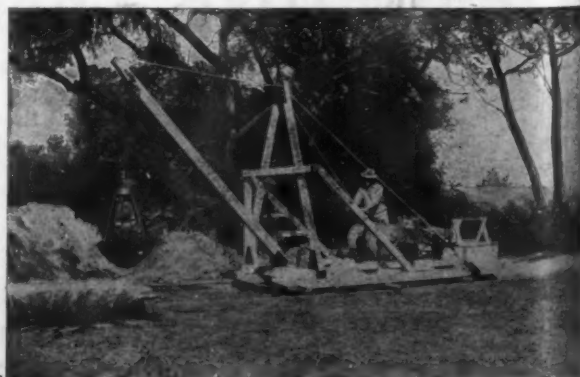
For economical operation, saving of time and labor, these Machines are the only logical ones to buy, because they are useful in so many ways.

Hayward Digging Machinery with Hayward Buckets—either Orange Peel or Clam Shell—make a combination for excavating and rehandling work that has done better work than any similar machinery in the world.

WRITE FOR NEW CATALOG No. 39.

The Hayward Company
50 Church St. New York

Illustration No. A1364.



THE MARION-OSGOOD COMPANY, Marion, Ohio, U. S. A.



Eastern Office: No. 51 State Street, Albany, N. Y.

**STEAM SHOVELS, DREDGES,
BALLAST UNLOADERS, All Sizes**

Manganese racks and pinions
Cast steel swinging circle
Substantial front end construction
Manganese dipper front
Specially strong boom
Gears with machine cut teeth
Large boiler and water tanks
Enclosed firing platform

Write fully covering your requirements. The advice and experience of our excavation experts is at your disposal.



Monighan Drag Line Excavators

STEAM AND GASOLINE POWER

The excavator shown in this cut can be placed on the work at less cost than any other excavating outfit. Crew for operating machine consists of only two men. The excavator is mounted on traction wheels provided with self-propelling mechanism. Boom is 40 ft. long. One cubic yard bucket. We will give you, upon request, full information regarding capacity, cost of operation, etc.

We build excavators with booms from 40 to 125 ft. long and buckets from one to three cubic yard capacities.

WRITE FOR EXCAVATOR CATALOG

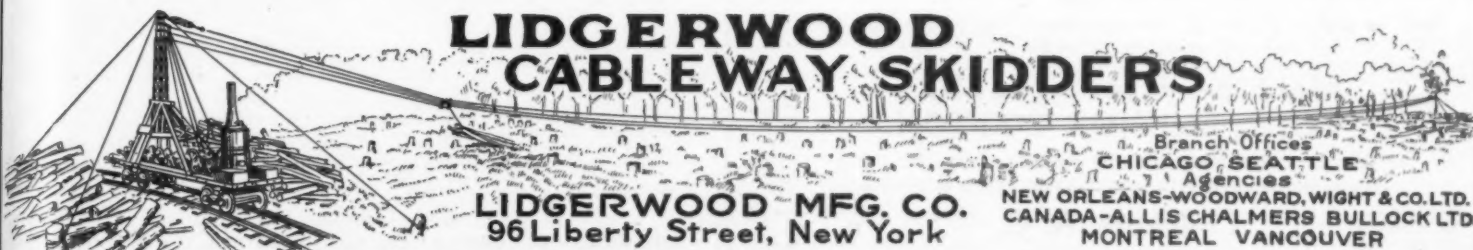
Monighan Machine Company

Dept. C 2016-2030 Carroll Ave., Chicago

LOGGING MACHINES THAT BEAT ALL OTHERS

for economy and continuous operations.

Independent of ground conditions. Logs come in free from dirt and gravel.



**LIDGERWOOD
CABLEWAY SKIDDEERS**

LIDGERWOOD MFG. CO.
96 Liberty Street, New York

Branch Offices
CHICAGO, SEATTLE
Agencies
NEW ORLEANS-WOODWARD, WIGHT & CO. LTD.
CANADA-ALLIS CHALMERS BULLOCK LTD.
MONTREAL VANCOUVER

For Land Reclamation

And All Excavating and Dredging

Our Special Buckets

Solve the Problem



Excavating Bucket

Clam Shell
Buckets
For All
Purposes

The G. H. Williams Co.

1502 Rockefeller Bldg.

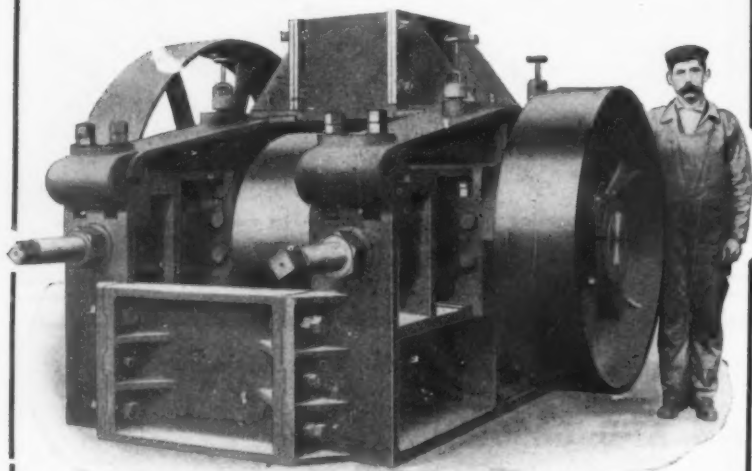
Cleveland, Ohio

Single
Rope
Buckets

Buchanan Crushing Rolls

Style "C" Special Illustrated

With Dust Covers Removed Showing
Plain Manganese Steel Shells



Made in Six Sizes: 36"x18" to 66"x30".

We make Rolls for all classes of service in every convenient size fitted with either plain or corrugated steel shells.

Buchanan { ALL-STEEL CRUSHERS
MAGNETIC SEPARATORS

GEO. V. CRESSON CO.

PHILADELPHIA AND NEW YORK
18th St. and Allegheny Ave. 140 Cedar St.
POWER TRANSMITTING MACHINERY

SINGLE ROLL CRUSHERS

FOR ROCK PHOSPHATE AND LIMESTONE

Capacity, 10 to 200 tons per hour for Coarse and Medium Fine Product

ORE WASHERS, JIGS, ELEVATORS, CONVEYORS, Etc.
LET US SEND CATALOGUE AND PRICES

McLANAHAN-STONE MACHINE CO., HOLLIDAYSBURG, PA

The Mecklenburg Iron Works

Will be glad to answer all correspondence from parties who need or expect to need

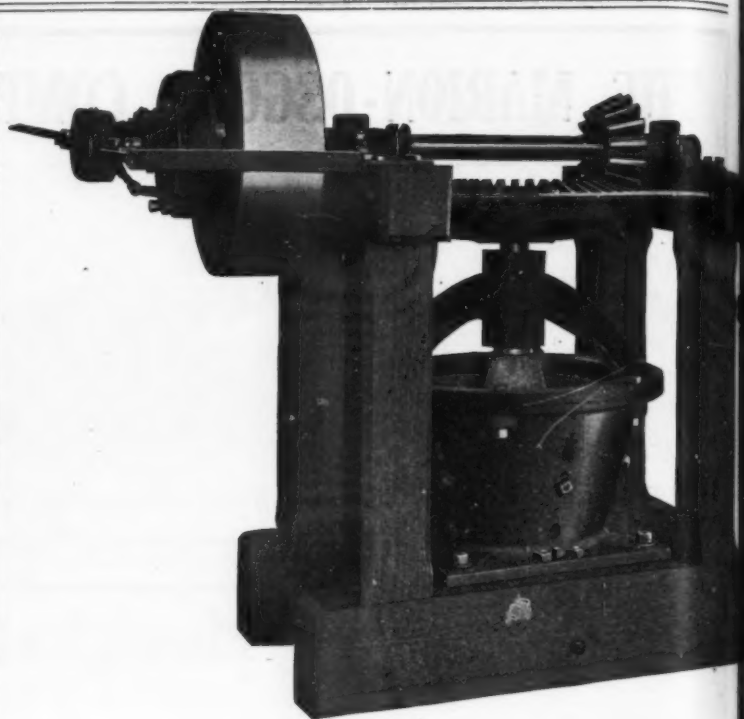
Machinery for Handling GOLD, IRON OR COTTON

as they have been manufacturing such machinery for thirty years, and can give entire satisfaction. Their address is

M. I. W.

Charlotte, N. C.

M. I. W.



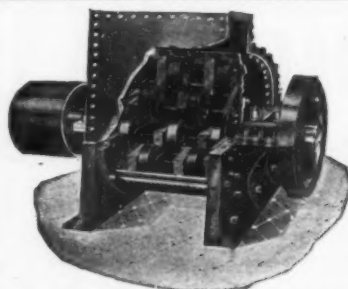
Bone Crusher

This crusher crushes large bones and other fertilizer material so they will be ready for the grinding mill, saving wear and tear on the grinders, increasing their capacity, and preventing iron or other foreign material entering them. Let us tell you more.

WALKER & ELLIOTT, Wilmington, N. C.

Fertilizer Machinery Specialists.

Everything required in a Fertilizer Factory.



If you want a **Pulverizer** that will do as much for YOU as it is doing for OTHERS read what others say about it.

Fletcher, N. C., Jan. 10, 1912.

American Pulverizer Co., St. Louis, Mo.

Gentlemen:—We have very recently made a thorough inspection of the No. 15 Pulverizer bought of you over eighteen months ago. During that period this Machine has produced several thousand tons of ground limestone. Although our rock is quite hard, your Pulverizer has withstood this severe duty admirably. It is fed with broken stone running from four inches downward. A very large part of the resulting product will pass a 60-mesh screen.

At this time we are using our second set of rings, and they are good for months of hard service. The original set of rings are by no means worn out, and we will put them back in the Machine when advisable to change.

The lengthwise interstices in the Grate Bars are just the thing. Like the rings, it is practically impossible to break one of these bars. Slugs of iron two inches thick have gone into this Machine without the slightest damage to any of its parts.

Despite the continued heavy work performed by the Pulverizer, we have never had a hot shaft, and it has never been necessary to rebabbit the shaft bearings.

It is a pleasure to us to give our unqualified commendation of the American Pulverizer. Wishing you much success, we remain,

Yours truly,

BLUE RIDGE LIME COMPANY.

Guaranteed. 30 days' test granted. Wire for circular.

AMERICAN PULVERIZER CO., 410 Jaccard Bldg., ST. LOUIS, MO.

ALFALFA HAY GRINDERS

WILLIAMS PATENT HAMMER SHREDDERS

We furnish Complete Plants for handling
Alfalfa Hay to Meal.

Same Machine will Grind and Mix Alfalfa, Oats, Corn, Pea Vines,
Cottonseed Hulls or any other Cereal used for feed.

Special Machines for Clover, Hay, Corn and Cob, etc.

Manufactured and Licensed Under 87 Separate and Distinct Patents.

WRITE FOR BULLETIN No. 22



THE NEW WILLIAMS

1700 Machines Now in Use

Works { 2701 N. Broadway,
St. Louis, Mo.

San Francisco Office: 347 Monadnock Bldg.

Sales Dept.: Old Colony, Chicago

The Williams Patent Crusher & Pulverizer Co.

PERFORATED SCREEN PLATES

in *all* METALS—
all THICKNESSES—
all SHAPES—
all SCREENING USES

SCREENS for coal, coke,
ore and rock, as well
as cotton seed oil mills and
phosphate mines. Let us
figure on your specifications.

HENDRICK MFG. CO.
Carbondale, Pa.

NEW YORK:
1017 Cortlandt Building

PERFORATED METALS

for Phosphate Mines, Cotton Seed Oil
Mills, Railroad Supplies, Sugar Mills;
also Screens for Coke, Rock, Coal,
Ore and all other purposes.

SEND FOR OUR ILLUSTRATED SHEET

CHARLES MUNDT & SONS

53-57 Fairmount Ave., Jersey City, N. J.

Cross Engineering Co.

Carbondale, Pa.

—MANUFACTURERS OF—

Perforated Metal Screens

For All Purposes

Send For Illustrated Catalogue.

ELEVATING, CONVEYING, TRANSMISSION

ROCK, ORE CRUSHING AND PULVERIZING

PLANTS IMPROVED, NEW PLANTS DESIGNED

We will contract for your plant complete and guarantee results. Will act as your
engineers only, or will supply any part of your equipment.

J. H. MacLAUCHLAN ENG. CO., 205 W. Lombard St., Baltimore, Md.

PULVERIZING MACHINERY

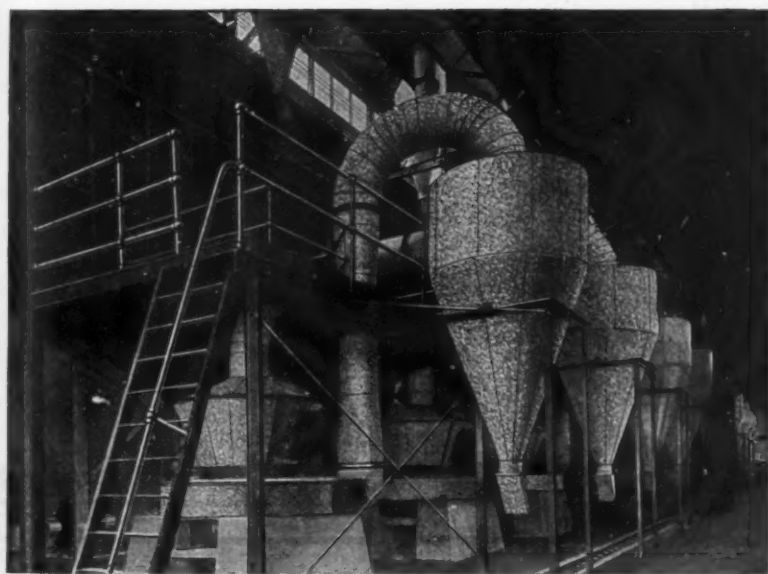
of every description

THE J. R. ALSING ENG. CO.

Ask for Catalog "M"

90 West St., N. Y. C.

Proposals advertised in the Manufacturers Record bring good results.



The Raymond Is the Only Dustless Pulverizing System

The Federal investigations of the number of deaths caused from occupational diseases will some day result in stringent laws designed to better conditions under which human beings are now compelled to work.

In the grinding rooms of many plants operating antiquated pulverizers the air is so thick with dust that men cannot remain in them but for short periods of time. Diseases of the throat and lungs are the result, followed frequently by premature death.

To grind any product to the finest mesh, to have it always uniform in fineness and at the same time to keep your grinding room free from dust, adopt the

RAYMOND PULVERIZING-SYSTEM AIR SEPARATING

and you will get the greatest efficiency for the least cost in power and maintenance. No system does all the good things which this system performs.

Adjust the mill to the degree of fineness you require and then as fast as the material reaches this fineness it is automatically taken from the mill by the special Raymond Air-Separating System. All the powder is kept within the system—none escapes to choke or poison the workmen.

You should investigate the Raymond System and learn of the work it is doing in large plants in many different industries.

Raymond Pulverizing Systems are designed by our Engineering Specialists, who fit them to conditions existing in your plant. They are installed with our absolute guarantee that they will do the service we claim or the sale is not made.

SEND FOR OUR BOOK "C," which explains in detail what our system is and how and where it may be used. Read this book and you may find the way to divert some items from the expense account into the dividend account.

We design special machinery and methods for Pulverizing, Grinding, Separating and Conveying all powdered products. We manufacture Automatic Pulverizers, Roller Mills, Vacuum Air Separators, Crushers, Special Exhaust Fans and Dust Collectors.

Raymond Bros. Impact Pulverizer Co. 1502 W. HARRISON ST.,
CHICAGO, ILL., U. S. A.

PLEASE CUT THIS OUT

RE MINDER

to write RAYMOND BROS. IMPACT
PULVERIZER CO., 1502 W. Harrison St.,
Chicago, for their Book No. "C" on
Modern Methods of Pulverization and
Air Separation. (12)



GOOD ROADS

In building good roads you
should use the

BEST CULVERTS

None better than

Virginia Metal Culverts

Tested and approved by the United States Government and the largest railroads in the country.

Made of AMERICAN INGOT IRON.

Guaranteed for 25 years.



VIRGINIA METAL & CULVERT CO., Inc.

Main Office and Factory, ROANOKE, VA.

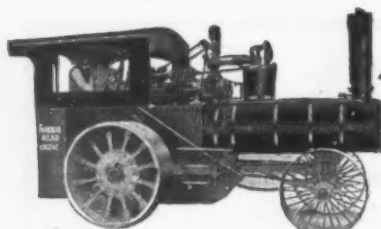
Branch Offices: 324 Dickson Bldg., NORFOLK, VA.
and Robson-Prichard Bldg., HUNTINGTON, W. VA.



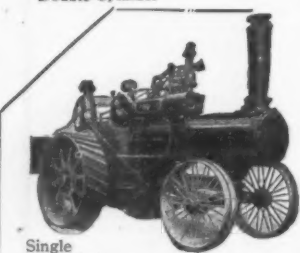
Manufacturers of

HIGH GRADE PAVING BRICK

COPELAND-INGLIS SHALE BRICK CO. Office, 610 1st Nat. Bank Bldg. BIRMINGHAM, ALA.



Double Cylinder



Single Cylinder

FARQUHAR

Built especially for Your
particular work!

For all Road Hauling, Plowing, Grading and Other Heavy Draft Work—nothing equals The Farquhar's rugged Constitution and tremendous efficiency.

Both single and double cylinder are independent mounted on steel frame separate from boiler. One piece steel Cannon box, with brass bushed bearings on counter shaft and main axle. All cast steel gears with five inch face double drive, and drive wheels that will stand up under the strain required of them.

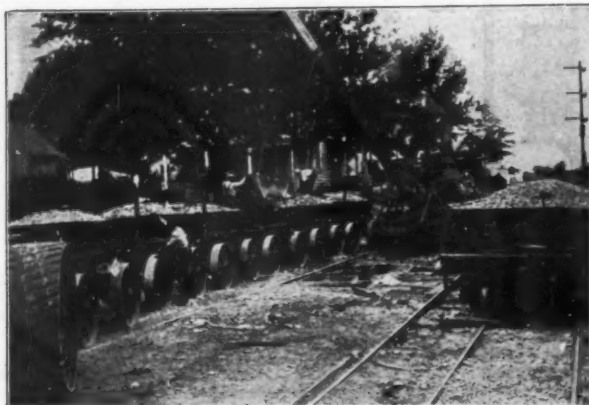
Catalog and full information for the asking.

A. B. FARQUHAR CO., Ltd.

BOX 701

YORK, PA.

Horseless Troys



A TRAIN OF TROYS AT ATLANTIC CITY

"I've a big hauling job. What can your TROY Reversibles do for me?"

Write us a note like this. We'll send you the answer from Texas and New Jersey; from Michigan and Mississippi—in fact, from every part of this country and Canada.

The answer is always the same—50 to 80% **SAVING OVER TEAMS**. Where would that boost the profits on your job?

GET CATALOG 2MR

The Troy Wagon Works Co.

106 East Race Street

TROY, OHIO

"THE SUSQUEHANNA" DUMPING WAGON

Our New Model Drop Bottom Wagon



Made in 1½, 1½, 2, 2½ and 3-yard Capacities
Other Sizes Built to Order

This NEW MODEL has one continuous chain with an equalizer in the rear that never fails to bring one door up in advance of the other. We have a strip of band iron the entire length of the one door, thereby giving a perfectly tight bottom.

The bottom doors are lined regularly with sheet steel. Has a very simple dumping device, and nothing to get out of order. The wheelhouse of this wagon is reinforced by heavy sheet steel well bolted, built with solid collar axles, best second growth white oak spokes, and we furnish the bodies in either Yellow Pine or Oak, as desired.

The doors are hinged high, so there is ample room when the load is dumped. The wagon is 5 inches lower than our Old Model, and is the most up-to-date wagon on the market today.

Write for our catalog, showing our full line of wagons and carts for the Contractor's use.

COLUMBIA WAGON CO.

COLUMBIA, PA., U. S. A.

American Ingot Iron CULVERTS

Low Cost
Quality

Economy
Efficiency



The question of Economy is vital to every Road Maker,—to the builder of Railways, or to the official responsible for the maintenance of our public highways,—and AMERICAN INGOT IRON CULVERTS are comparatively inexpensive.

The ultimate test of Economy is efficiency, and AMERICAN INGOT IRON CULVERTS are proven by their record in every department of Roadway construction.

It is our business and our pleasure to demonstrate these facts.

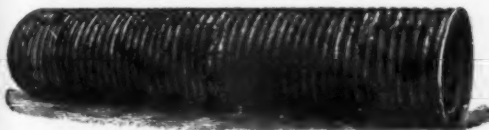
Ask for Catalogue Number Four.



**North Carolina
Metal Culvert Co.**
GREENSBORO, N. C.



These Corrugated Metal Culverts



**STAND THE
STRAIN**

The heaviest loads do not affect them. Carefully made and thoroughly tested before shipped.

Made of "American Ingot" Iron, they cannot rust. They make a permanent installation. They cost less than wood and are safer than their imitators. Used by the biggest railroads and the best road engineers. Write for "Book of Tests."

KENTUCKY CULVERT MFG. CO.

BUECHEL, KY.

HIGH GRADE PAVING BRICK

Guaranteed to stand 18% standard test

THE CARLYLE PAVING BRICK CO.

PORTSMOUTH, OHIO.

"GENUINE OPEN HEARTH IRON" CULVERTS



Corrugated
Galvanized

TANKS, TROUGHS, Etc.

Write for a copy of our monthly "News"

HARRY BROS. CO.

NEW ORLEANS, LA.

NEWPORT, KY.



GET OUR PRICES ON STEEL TANKS & CISTERNS

WE MAKE THE BEST
THAT MONEY CAN BUY.

N.O. ROOFING & METAL WKS.,
NEW ORLEANS, MOBILE

ACME CORROSION STABLE CORRUGATED CULVERTS

ARE MADE OF
ANTI-CORROSIVE



Note the big difference between No-Co-Ro Metal and Steel after a 10-hour accelerated corrosion test in a 20% solution of Sulphuric acid at an average atmospheric or natural temperature. Both samples were the same thickness before the test.



COMPARATIVE LOSS

No-Co-Ro Metal	- - - - -	2.7%
Steel	- - - - -	93.2%

THIS TEST DEMONSTRATES THE VASTLY SUPERIOR CORROSION-RESISTING QUALITIES OF NO-CO-RO METAL AS COMPARED WITH STEEL

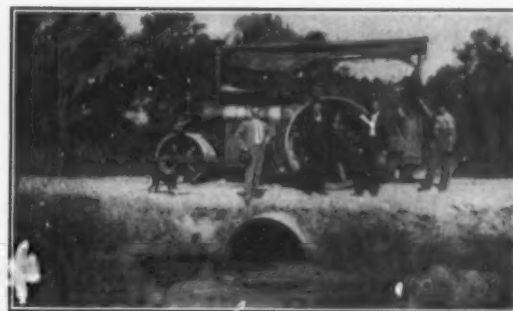
Quality! Thickness! Nestability!!! These are features of "Acme" Corrugated Metal Culverts, the equal of which you don't get in others. "Acme" are the most satisfactory and longest lasting corrugated culvert you can buy. Send for our literature—our "Acme" Culvert booklet and our "No-Co-Ro Metal" pamphlet. They're both, really, educational.

The Canton Culvert Co.,

Manufacturers,

Canton, Ohio

THIS AMERICAN INGOT Corrugated Culvert



is 5 ft. wide and is covered with only 5 inches of sandy soil. Notice the weight of the 10-ton Road Roller does not even deflect it. Twenty years of actual service in proof conclusive that corrugated culverts are durable and economical, and most convenient to install.

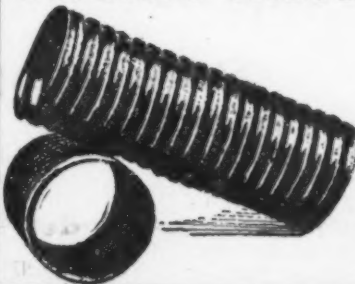
Buy Southern made American Ingot Iron Culverts—save freight and help build up the New South.

WRITE FOR FURTHER PARTICULARS.

The Dixie Culvert & Metal Co. Atlanta, Ga.
Little Rock, Ark.

O. K. HARRY CORRUGATED CULVERT PIPE

(STEEL OR IRON)



For better roads and lower maintenance cost. Serviceable, durable, non-corrosive and simple to install.

Manufacturers also of Corrugated Metal CISTERNs and Storage TANKS.

Our new and sanitary Cistern gives health to their users.

Write for Catalogue

O. K. HARRY STEEL CO.

2340-42 Papin St., St. Louis, Mo.

Factories—St. Louis and Dallas, Tex.

American Ingot Iron Road Culverts, Tanks, Roofing and Siding.



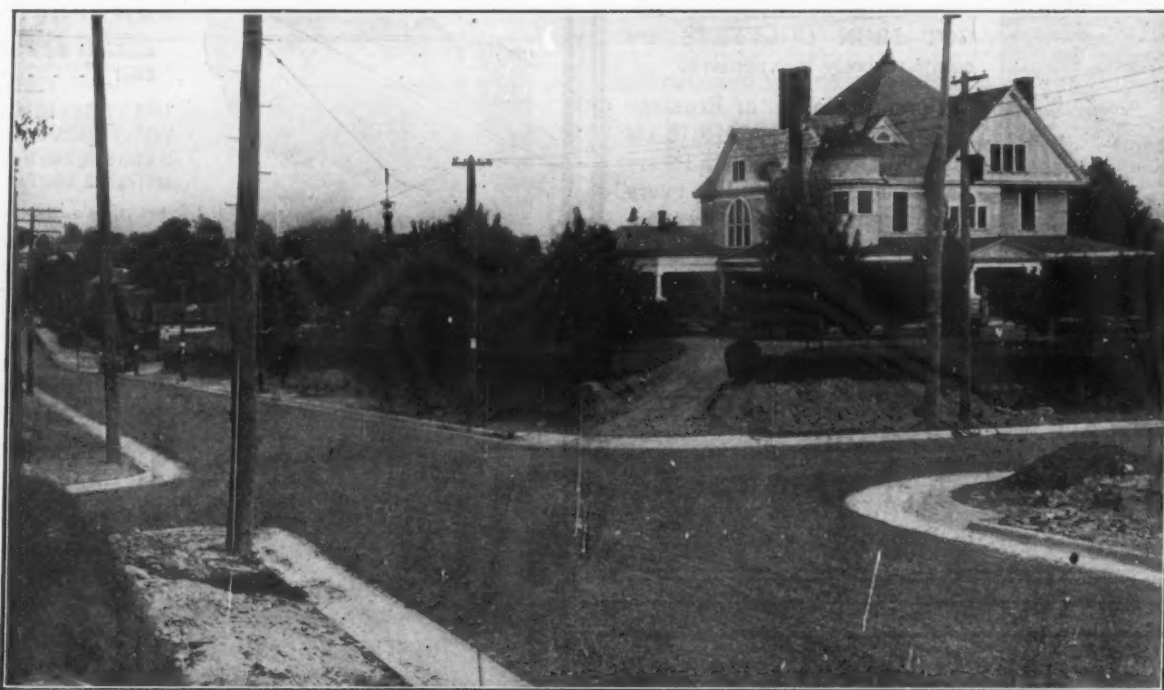
Look for the trade mark. It means durability. Don't accept the imitations. We have the proof that our culverts will carry the heaviest loads that travel and will last for years where others fail. Write for Pamphlet A on AMERICAN INGOT IRON and B on culverts and tanks.

The Tennessee Metal Culvert Co.,

Nashville, Tennessee.

STANDARD

Asphalt Macadam Binders and Asphalt Road Oils



Morehead Ave. and Duke St., Durham, N. C.—Treated With Standard Asphalt Macadam Binder

STANDARD ASPHALT BINDERS are made in three grades, "A," "B" and "C," for use under varying conditions of road maintenance and construction.

These products are absolutely pure, containing over 99% bitumen, and can be manufactured to any consistency desired. The three grades "A," "B" and "C" will be found to solve all problems of road surfacing or road construction that are ordinarily met with.

BINDER "A." A semi-solid product to be applied hot over stone or gravel roads subjected to heavy automobile travel. A covering of sand or screenings is necessary after Binder "A" is applied.

BINDERS "B" AND "C." Solid products used for road construction under the penetration or mixing methods—many hundreds of miles of roads in all sections of the country speak for the uniform success of these products in producing **DUSTLESS, PERMANENT ROADS.** BINDER "C" is slightly harder than BINDER "B" and is used in sections subjected to long continued heat.

Standard Asphalt Road Oils

STANDARD ASPHALT ROAD OILS are made with varying percentages of asphalt, from the lightest, containing 30% asphalt, to the heaviest, containing 60% asphalt. Used under all conditions necessitating freedom from dust and protection of surface.

A full description of our various products, together with specifications for their correct use, is given in our Illustrated Booklet. This will be sent free upon request.

STANDARD OIL COMPANY

(Incorporated in New Jersey)

ROAD OIL DEPARTMENT

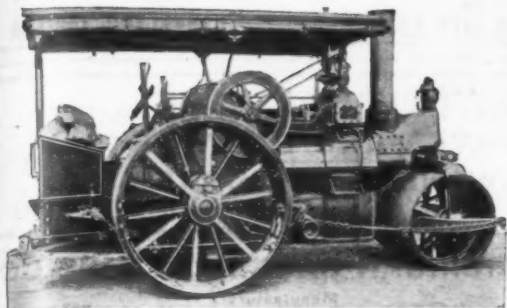
Baltimore, Md.

Newark, N. J.

BRANCH OFFICES:

Richmond, Va. Norfolk, Va. Charlotte, N. C. Charleston, W. Va. Washington, D. C.

IROQUOIS ROLLERS



Trouble Proof,
Long-Service

Made in 10, 12 and
15-ton sizes.

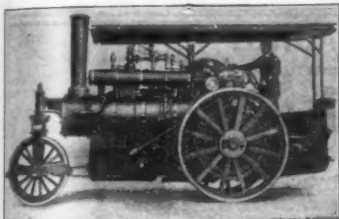
The American
Standard—Based
on 19 Years
Experience

Send for
CATALOGUE.

Iroquois Iron Works, Buffalo, N. Y.

Manufacturers of a complete line of Paving and Road-Making Tools and Machinery

**THE KELLY-SPRINGFIELD
ROAD ROLLER CO.**
SPRINGFIELD OHIO



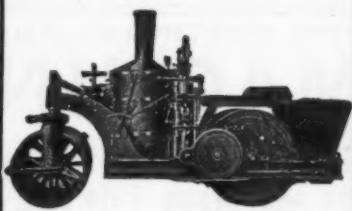
ROAD ROLLERS

ALL TYPES
ALL SIZES

SEND FOR CATALOGUE

Buffalo Pitts Rollers

BUILT FOR SERVICE



Made in all types and sizes for all purposes
4 to 20 tons

BUFFALO STEAM ROLLER CO.

BUFFALO, N. Y.

The Austin Motor Road Roller



Sizes 7, 8, 10, 12, 15 Tons

Using Gasoline, Kerosene or Distillate

**NO SMOKE, NO SPARKS, NO BOILER TROUBLES,
NO WATER TEAMING**

SAVES time of raising steam and washing boilers.
SAVES money in repairs and operating cost.

**We specialize in EARTH HANDLING, ROCK CRUSH-
ING and ROAD MAKING MACHINERY including:**

Wheel and Drag Scrapers, Road and Elevating Grader, Road Plows,
Scarifiers, Street Sprinklers and Sweepers, Dump Wagons, Rock Crush-
ers, etc., etc.

The Austin-Western Co., Ltd.

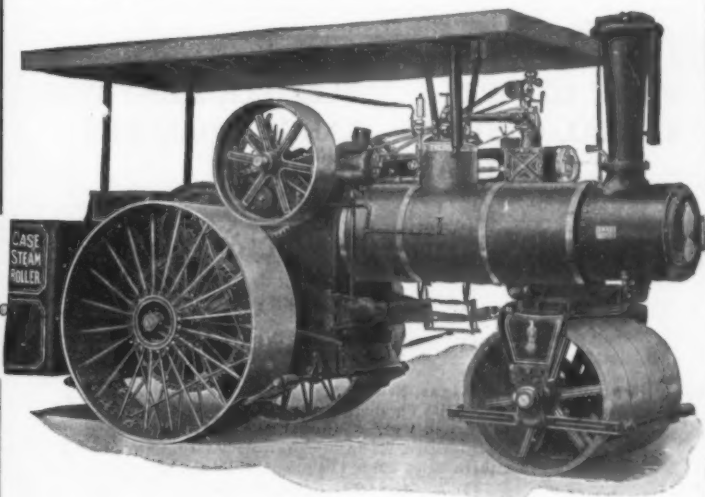
NEW YORK CHICAGO SYRACUSE, N. Y. ST. PAUL, MINN. MEMPHIS, TENN.
ATLANTA, GA. DALLAS, TEXAS SAN FRANCISCO, CAL.
LOS ANGELES, CAL. SALT LAKE CITY, UTAH

CASE ROAD ROLLERS ROAD GRADERS ROAD SCRAPERS

and other Machines for

Building Modern Highways

**CASE MACHINERY DOES BETTER
WORK AT A SAVING**



10-Ton Road Roller, \$2200—6% Discount for Cash.
F. O. B. Cars at Factory.

CASE ROAD MACHINERY

has done better work and saved money for others. It will do the same for you. For over 70 years we have manufactured the better kind of machinery, and today make the highest grade road building equipment on the market.

We market every machine necessary for road building, and each and every machine receives special attention and is the best in its line. All our products are guaranteed.

Case Road Machinery will do your work exactly right, and in a way that will please everybody. It will increase your profits. A trial will prove this.

We have an agent near you who will gladly give you any information desired, and go fully into details.

Write for Catalogue L.

**J. I. CASE THRESHING
MACHINE COMPANY**

(INCORPORATED)

RACINE, WIS.

U. S. A.

Cast Iron PIPE

in all regular sizes, 3 inch to 84 inch

FOR
WATER SEWAGE CULVERTS
GAS DRAINS Etc.

FLANGED PIPE FLEXIBLE JOINT PIPE
SPECIAL CASTINGS LARGE CYLINDERS
HEAVY CASTINGS

United States Cast Iron Pipe & Foundry Co.

GENERAL OFFICES:

71 Broadway, - - New York

New York Sales Office, 71 Broadway, New York.
Philadelphia Sales Office, 1421 Chestnut St., Philadelphia.
Pittsburgh Sales Office, Henry W. Oliver Bldg., Pittsburgh.
Western Sales Office, 122 So. Michigan Boulevard, Chicago.
Southern Sales Office, Chamberlain Bldg., Chattanooga, Tenn.
Pacific Sales Office, Monadnock Bldg., San Francisco, Cal.

Glamorgan Pipe & Foundry Co.
LYNCHBURG, VA.

Manufacturers of



FOR WATER AND GAS

SPECIAL CASTINGS

Flanged Pipe and Flanged Specials

General Founders and Machinists

GLAMORGAN



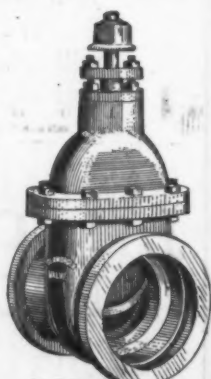
HYDRANTS.

Glamorgan "Patented"
Compression Hydrants
Gate Hydrants

VALVES

FOR
Water, Gas and Steam

GLAMORGAN



VALVES.

We solicit inquiries for Grey Iron Castings
of any description.

IF YOU WANT FIRST-CLASS

SEWER PIPE

Send your inquiries to the
CANNELTON SEWER PIPE CO.

MADE OF FIRE CLAY
CANNELTON, INDIANA

CAST IRON PIPE
FOR WATER AND GAS WORKS
McWANE PIPE WORKS

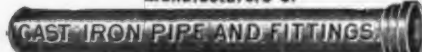
LYNCHBURG, VA.

2 Rector Street, NEW YORK



AMERICAN CAST IRON PIPE CO.

Manufacturers of



BIRMINGHAM

ALABAMA

Western Office—718 Scarritt Bldg., Kansas City, Mo.
Eastern Office—56 Liberty St., New York.

AMERICAN PIPE & CONSTRUCTION CO.

ENGINEERS AND CONTRACTORS FOR

WATER-WORKS

No. 112 NORTH BROAD STREET, - - - PHILADELPHIA
Manufacturers of PHIPPS' HYDRAULIC PIPE

PIPE CUTTING AND THREADING

MACHINES

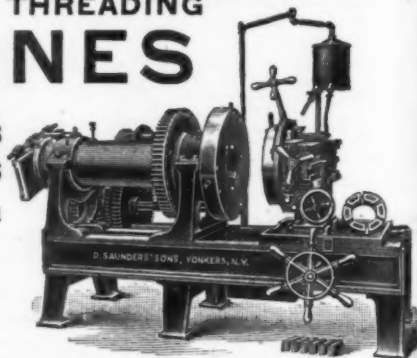
All Sizes for Pipe Mills
Gas and Steam Fitters

This cut illustrates No. 5 and
No. 6 Machines.

No. 5 has a range of 1 1/4 to 6".

No. 6 has a range of 2 1/2 to 8".

Send for literature.



D. SAUNDERS' SONS, Inc.

YONKERS, N. Y.

TWELVE REASONS WHY

You Should Use

Trade **"LEADITE"** Mark

Registered U. S. Pat. Office

For Jointing Water Mains

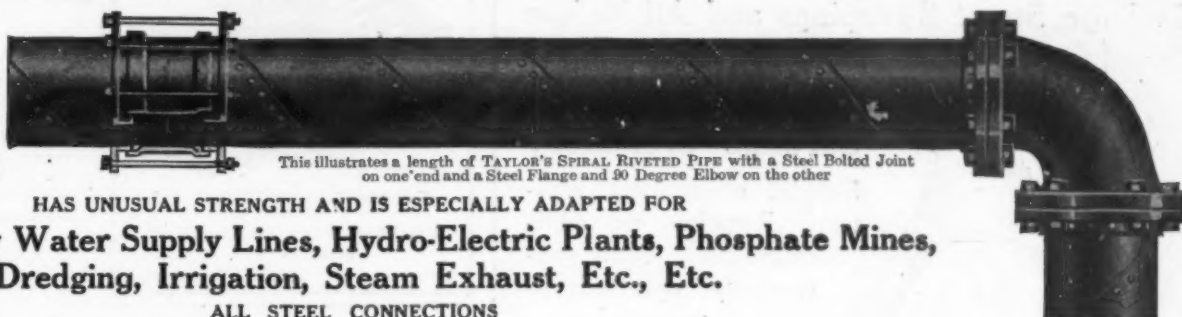
- DURABILITY.** Leadite joints increase in strength with age.
- NO CAULKING.** Leadite joints require no caulking because the Leadite adheres to the pipe, making a water-tight bond.
- COMPARATIVE QUANTITIES.** One ton of Leadite is equivalent to four tons of lead.
- LABOR SAVING.** Saves caulking charges and digging of large bell-holes, and reduces the cost of trench pumping to the minimum.
- COST.** Its use saves 50 to 65% over lead, owing to the saving effected in material and labor.
- TOOLS.** As no caulking is required, fewer tools are needed.
- TRANSPORTATION.** Considerable freight charges are saved because Leadite is lighter than lead.
- HAULING.** Saves hauling expense on the work because you move only one-fourth the weight of jointing material.
- FUEL.** Saves fuel because you melt only one ton of material instead of four, and not as much heat is required, either.
- DELIVERY.** We can make prompt shipments.
- DAMAGE SUITS.** Claims for damages caused by joints blowing out are prevented because Leadite joints will not blow out under any pressure.
- USERS.** Progressive water-works all over the country use Leadite.

Write for Booklet.

THE LEADITE COMPANY, INC.
Land Title Building, Philadelphia

TAYLOR'S SPIRAL RIVETED PIPE

Made from
3" to 42" inside
Diameter
Up to 1/4" Thick



This illustrates a length of TAYLOR'S SPIRAL RIVETED PIPE with a Steel Bolted Joint on one end and a Steel Flange and 90 Degree Elbow on the other

HAS UNUSUAL STRENGTH AND IS ESPECIALLY ADAPTED FOR

Town and City Water Supply Lines, Hydro-Electric Plants, Phosphate Mines, Dredging, Irrigation, Steam Exhaust, Etc., Etc.

ALL STEEL CONNECTIONS

Our New 80-page Catalogue 5-H is a Money Saver. Sent Free.

AMERICAN SPIRAL PIPE WORKS, Main Office and Works, CHICAGO

New York Office:
50 Church Street

Lengths
6 to 12 ft.
long



Lengths
6 to 12 ft.
long

\$25,000.00 per mile SAVED!

We can save you this amount on an installation of 48-inch Wyckoff Machine Made Wood Stave Pipe over Cast Iron and

WE CAN PROVE IT

We can save you \$10,000.00 per mile on 24-inch

AND IT LASTS AS LONG

Sizes 1 inch to 48 inches in diameter. Pressures 10 lbs. to 200 lbs.

A. Wyckoff & Son Co., Elmira, N. Y.

Johnson-Peters Co., Pittsburgh Terminal Warehouse, Pittsburgh, Pa.

SLUICE GATES

ALL STYLES AND SIZES

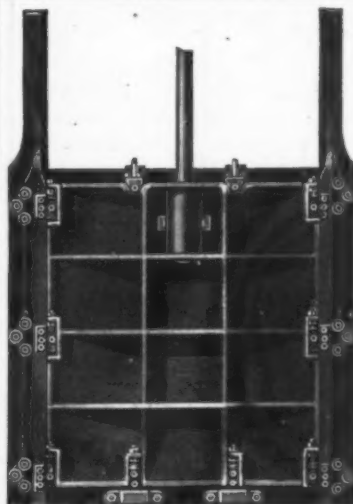
Hand, hydraulic and electric hoisting mechanism.

Designs
and
Estimates
Furnished

Send
for
Catalogue

COLDWELL-WILCOX CO.

2 River St.
NEWBURGH, N. Y.



Bibb Sewer Pipe Co.

MACON, GEORGIA

Manufacturers of
Salt Glazed Vitrified Sewer Pipe

Fire Clay Flue Linings

Stove Pipe

Wall Coping

Inquiries Solicited



ROOT SPIRAL RIVETED PIPE

For more than 30 years the standard spiral riveted pipe—imitated, but never equaled in quality or value.

ABENDROTH & ROOT MFG. CO.

50 Church St., NEW YORK. CHICAGO, Commercial Natl. Bank Bldg. MEXICO, Mutual Bldg.

Don't tear up streets hunting pipe

It's expensive and unnecessary

The D. B. M. Wireless Pipe Locator



will find the exact location of metal pipes under ground, no matter how deeply they're buried, nor what they're covered with.

Write for 14 days' free trial offer.

MODERN IRON WORKS CO. QUINCY, ILL.
Southern Sales Agent—C. F. Blount, 522 Grant Bldg., Atlanta, Ga.

HIGH-GRADE SHALE SEWER PIPE

Thoroughly Vitrified. None Better Vitrified Wall Coping and other Clay Products. Annual Capacity 1900 cars.

POMONA TERRA-COTTA CO. POMONA, N. C.

A. K. ROBINS & CO.

Canning Machinery

CANS, CASES, LABELS

116 Market Space, BALTIMORE, MD.



The Bourbon Copper and Brass Works Company

MANUFACTURERS OF

FIRE HYDRANTS and STOP VALVES

Water Works and Fire Department Supplies and Extension Valve Boxes

Long Distance Phone, Canal 3297. 818 and 820 E. Front St., Cincinnati, O.



COLUMBIAN IRON WORKS
CHATTANOOGA, TENN.

MANUFACTURERS OF

Fire Hydrants, Valves, Valve Boxes, Sluice Gates, Meter Boxes and Water Works Supplies

Also Municipal and Building Castings

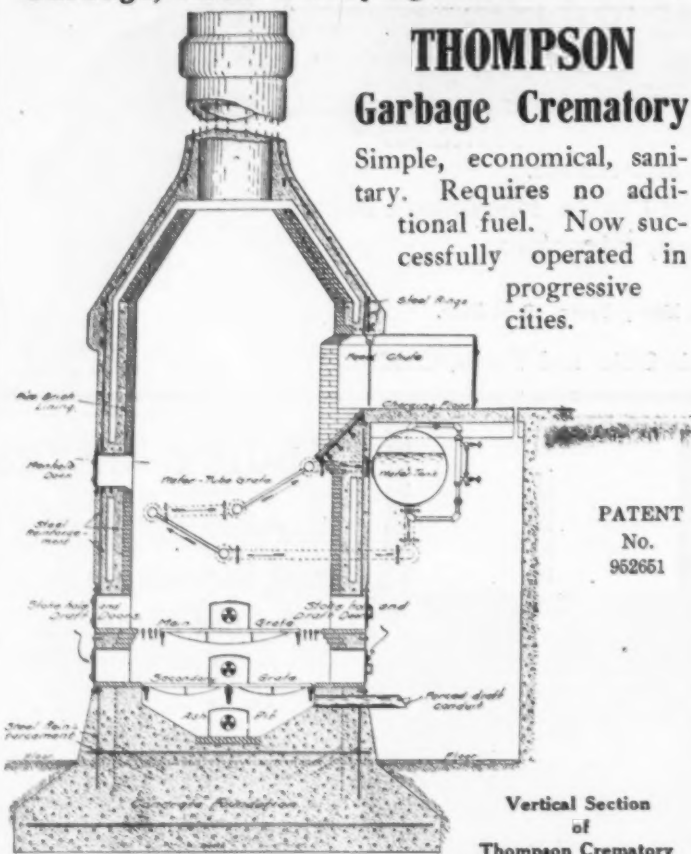
ESTIMATES PROMPTLY FURNISHED



THE MODERN METHOD OF DISPOSING OF Garbage, Street Sweepings and All Refuse

THOMPSON Garbage Crematory

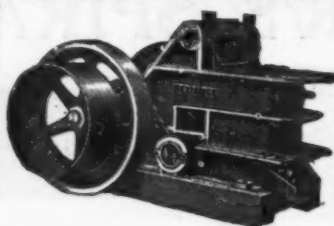
Simple, economical, sanitary. Requires no additional fuel. Now successfully operated in progressive cities.



PATENT
No.
952651

SPECIALTY ENGINEERING CO., HOUSTON, TEX.

Reliance Crushers



Noted for Economy, Efficiency and Service.
UNIVERSAL ROAD MACHINERY CO.
KINGSTON, N. Y.

BOSTON ROCHESTER NEW YORK

MACHINERY FOR Manufacturing

SHEET METAL GOODS

Chas. Leffler & Co. 49-61 Clymer St.,
BROOKLYN, N. Y.



No Threads No Rivets
**WHITLOCK
PIPE
JOINT**

for
High Pressure Work

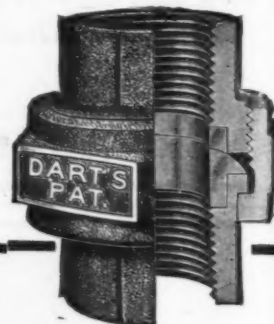
Manufactured by
The Whitlock Coil Pipe Co., Hartford, Conn.
N. Y. Office, Singer Bldg.

American Valve & Meter Co. CINCINNATI, OHIO.

Manufacturers of

RAILROAD STAND PIPES.
RAILROAD TANK VALVES AND TANK
FIXTURES.
FLOAT OR AUTOMATIC INLET VALVE
FOR TANKS.
SWITCH STANDS FOR ALL PURPOSES.
WATER METERS.

Write for Catalogue



DART UNIONS

Have Bronze to Bronze at
the Joint—No Corrosion.

This construction is embodied in our
Flange Elbow, Tee, Male and Female and
Air Pump Unions. Ask for circular and
sample.

E. M. Dart Mfg. Co.
PROVIDENCE, R. I.

THE FAIRBANKS CO., Agents
Canadian Factory, Dart Union Co., Ltd.,
Toronto.

Male and Female Pattern "Kewanee" Unions Avoid Troublesome Fittings

¶ Several Railroads are now using the Male and Female Pattern "Kewanee" Union exclusively for reservoir connections.

¶ Previously a union with a close nipple had been used. This connection is generally difficult to make and keep tight. Now, the M & F "Kewanee" Union has been substituted, and no other fitting will be considered.

¶ WHY? Because a close nipple is never required; the M & F is always easy to move and can be used over and over again—hundreds of times.

¶ For all connections where a close nipple is now used, try an M & F "Kewanee" Union.



"The Union With No Inserted Parts."

Special

Order a few "Kewanee" Unions, Male and Female pattern, for trial. "Kewanee" Unions and Specialties are carried in stock in practically every jobbing center in the country.

DON'T ACCEPT A SUBSTITUTE—Insist on the "KEWANEE"

¶ Ask for your copy of THE WHOLE KEWANEE FAMILY.

NATIONAL TUBE COMPANY

General Sales Offices, Frick Bldg., Pittsburgh, Pa.

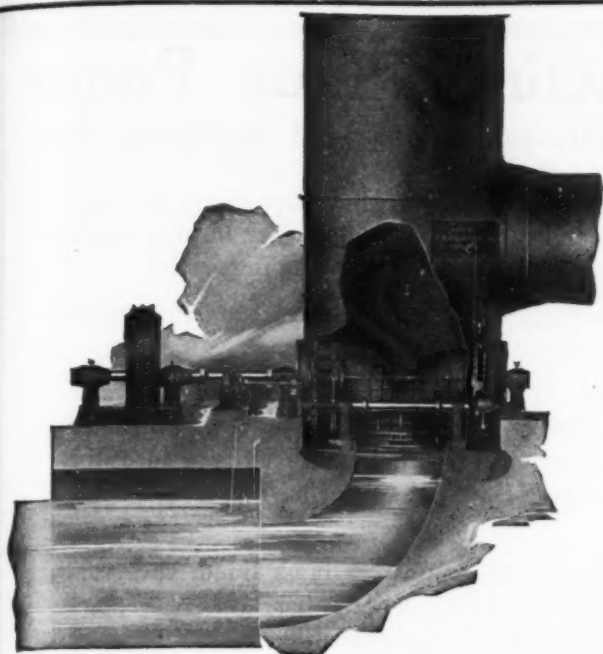
DISTRICT SALES OFFICES: ATLANTA DENVER NEW YORK PITTSBURGH SALT LAKE CITY
CHICAGO NEW ORLEANS PHILADELPHIA ST. LOUIS

PACIFIC COAST REPRESENTATIVES: U. S. STEEL PRODUCTS CO.—SAN FRANCISCO PORTLAND
SEATTLE LOS ANGELES

EXPORT REPRESENTATIVES—U. S. STEEL PRODUCTS CO., NEW YORK CITY

"KEWANEE" Advantages

- Brass to iron thread connection—No corrosion.
- Brass to iron ball joint seat—No gasket.
- 125 pounds compressed air test under water—No defective fittings.
- Solid, three piece construction—No inserted parts.
- Easily disconnected—No force required.



21,600 Horse Power IN HYDRAULIC TURBINES

ONE OF THREE UNITS

EACH OF

7200 H. P., 150 R. P. M., 48' Head

Turbines built for any power or speed for heads from 5 feet to 600 feet.

Head Gate Hoists, Trash Rack, Sluice Gates, Steel Piping, Shafting and Bearings also furnished.

Send for Bulletins

S. Morgan Smith Co.
YORK, PA.

Branch Offices: 176 Federal Street, Boston, Mass. 644 American Trust Bldg., Chicago, Ill.



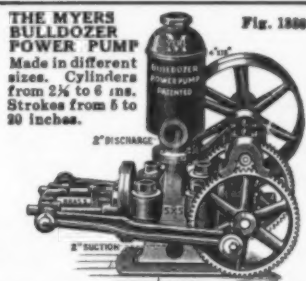
Take off your Hat to the

Well Pumps, Power Pumps,
Tank Pumps, Spray Pumps
With Glass Valve Seat
A Line Without an Equal
on the Globe

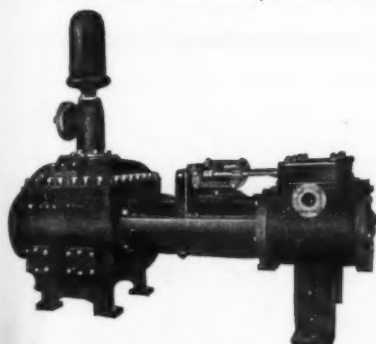
Write for Circulars and Prices to
F. E. MYERS & BRO.
ASHLAND, OHIO, U. S. A.

MYERS

The Pump that **PUMPS** **HAY TOOLS** **BARNDOR HANGERS** **HAY RACK CLAMPS**



THE MYERS BULLDOZER
WORKING HEADS, PUMPING
JACKS, CYLINDERS, ETC.



BLAKESLEE
MFG.
CO. **PUMPS** 27 DU QUOIN ST.
DU QUOIN, ILL.

When you need a good pump,
don't guess—buy a GUARANTEED Blakeslee.

When we know your pump conditions we will prescribe
the exact machine you need. Then we'll guarantee its
performance and stand behind it absolutely.



Water Supply, Railroad Tanks, Irrigation, Country Homes, Towns, Villages

Pumps Water with Water Power. No Attention. No Expense. Runs Continually.

RIFE AUTOMATIC Complete System extending to stable, greenhouse, lawn, fountains and formal gardens.
HYDRAULIC RAM Operates under 18-in. to 50-ft. fall. Elevates water 30-ft. for every foot fall used. 80 per
cent. efficiency developed. Over 6,000 plants in successful operation. Large plants for towns,
institutions, railroad tanks and irrigation. Catalogue and estimates free.

RIFE ENGINE COMPANY, 2133 TRINITY BUILDING, NEW YORK, U. S. A.

The Cook Well Co.

No. 13 S. 4th St.
ST. LOUIS, MO., U. S. A.

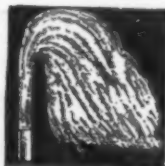
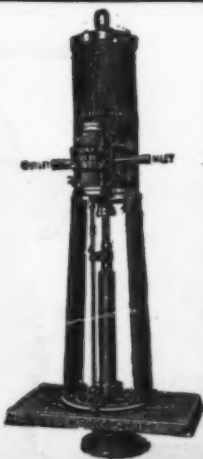
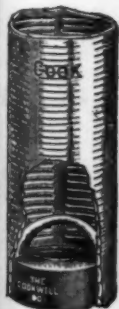
Cook's System of Wells

For Cities, Towns, Villages,
Railroads, Ice Plants, Brew-
eries and Manufactories.

**COOK'S PATENT BRASS TUBE
WELL STRAINER**

**COOK'S DEEP WELL PUMPING
ENGINES**

Estimates furnished upon application.
Write for catalogue and prices.

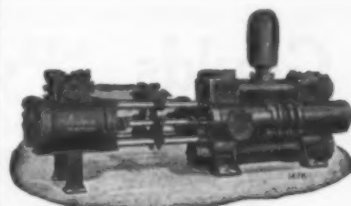


Established 1885
Have a **WELL** at your
flowing plant
and protect em-
ployees' health. We'll
drill it. Write
**HUGHES SPECIALTY WELL
DRILLING CO.**
96 Ashley Ave.
Charleston, S. C.
Booklet

Well Drilling Machines

Over 70 sizes and styles, for drilling
either deep or shallow wells in
any kind of soil or rock. Mounted
on wheels or on stilts. With en-
gines or horse powers. Strong,
simple, durable. Any mechanic
can operate them. Send
for catalog.

**WILLIAMS BROS.,
ITHACA, N. Y.**



Duplex Plunger Boiler Feeder.

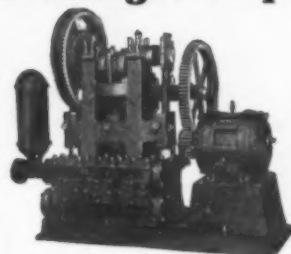
We have produced several new lines of
pump patterns, among them are heavy Boiler
Feeders and Water Supply Pumps. Write
for our Catalogue.

Steel Forged **HYDRAULIC PUMPS**
Jet and Surface **CONDENSERS**

DEAN BROS. STEAM
PUMP
WORKS
INDIANAPOLIS.

NOT IN THE PUMP TRUST

Deming Pumps



Deming Triplex Power Pump direct
connected to electric motor.

Ask for our general Cata-
logue of hand, wind-mill,
power and spray pumps, or
write us your specifications.

The Deming Company
SALEM OHIO
HAND AND POWER PUMPS

GENERAL AGENCIES:

Henion & Hubbell, Chicago
Sydnor Pump and Well Co., Richmond
Dunn Machinery Co., Atlanta
Moore & Handley Hdw. Co., Birmingham
Laib Co., Louisville, Ky.

TURBINE WATER WHEELS

Highest efficiency
Both **CYLINDER** and **REGISTER** Gate
Write for catalog

Davis Foundry & Machine Works
ROME, GA.

DOWNIE DOUBLE STROKE DEEP WELL PUMPS



Steam or Electric
Driven or Geared
from shaft are of-
fered for service in
elevating large quan-
tities of water from
deep Artesian Wells.
Single Stroke Pumps
for lighter deep well
work. Catalog No. 6.

**Keystone Pump &
Well Engine Co.**
BEAVER FALLS, PA.

26 YEARS EXPERIENCE

DRILLING

Artesian Wells and are equipped for
drilling from 100 to 1500 ft. deep,
any locality, also

INSTALLING

complete water plants and

ERECTING

steel structures, wooden tanks
and windmills

LET US QUOTE YOU

STOTHOFF BROS., Flemington, N. J.
Telephone 24

Goulds "Pyramid" Double-Acting Piston Pump

For General Water Supply, Tank Pumping, Circulating Brine, Oil Pumping, Etc.

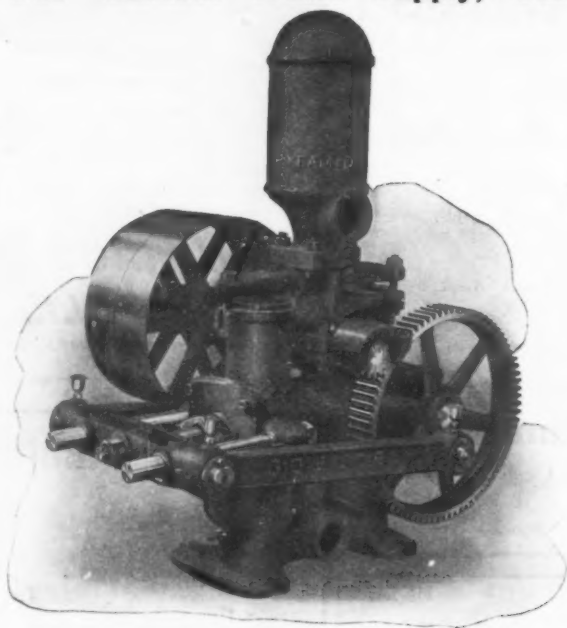


Fig. 1531.

The "Pyramid" is a high-grade power pump of small capacity, for general water supply in country homes, small mills, factories, etc., and for general pumping service.

It is built in capacities ranging from 12 to 116 gallons per minute and for elevations up to 175 feet.

When used in connection with pneumatic water supply systems, this pump is equipped with a special air cylinder attachment which supplies the air pressure for the tank—eliminating the necessity of having an extra air pump.

The cylinder of this pump is brass lined; the gears are machine cut and in every detail it has the best grade material and workmanship.

Send for bulletin No. 100, which describes this pump in detail.



THE **GOULDS** MFG. CO.
LARGEST MFR. OF **PUMPS** FOR EVERY SERVICE

59 W. Fall Street

BRANCHES AND AGENCIES IN ALL IMPORTANT CITIES

Seneca Falls, N. Y.

ALBERGER CENTRIFUGAL PUMPS

The highest efficiency possible in any given service.

WE have given the pumping problem much study; we have had long experience in the pumping line, and are in position to furnish a pump for any pumping service. We will study your requirements and plan and estimate and contract to give you just what is needed. Our pumps are always satisfactory.

Alberger Pumps are successfully operating all over the country. Can be driven by any power. Made in several styles. Let us send you an illustrated catalogue full of interesting pump facts.

ALBERGER PUMP CO.

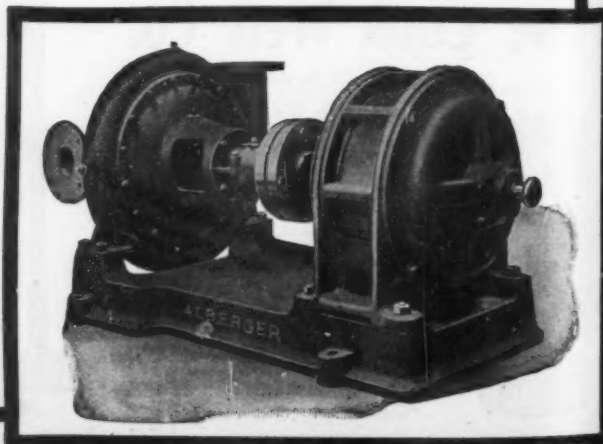
140 Cedar St., NEW YORK

Pittsburgh

San Francisco

St. Louis

Chicago



On

The New York Subways
The Hudson Tunnels
The Catskill Aqueduct



CAMERON PUMPS

Greatly outnumbered all other makes.

Why this predominance of the Cameron?

Because Contractors and practical Engineers have been educated by experience to know that the Cameron stands hard service where other makes fall down.

Simplicity is the striking Cameron characteristic. It contains fewer working parts than any other steam pump—which spells reduction in power, re-

duction in repair costs, easier operation—and therefore greater capacity. When you buy a Cameron you buy *experience*—the elimination of *experiment*.

The Slogan of the Cameron—"Character: the Grandest Thing."

Complete Catalog No. 21 will interest you.

A. S. Cameron Steam Pump Works

Foot of East 23d Street, New York

Samson Turbines

Develop More Power

with a given quantity of water than any other turbine of the same dimensions, operating under the same conditions.

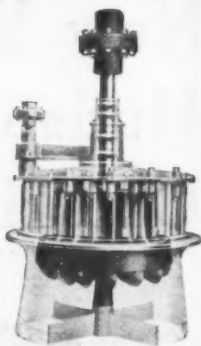
We build these turbines in all sizes and styles, on upright or horizontal shafts, belted or direct connected, single or in pairs. They are suitable for direct-connecting to generators, air-compressors, pumps or other machinery.

If interested send for our latest literature.

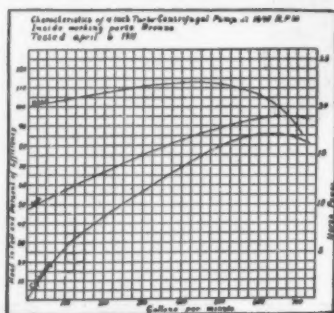
The James Leffel & Co.

310 Lagonda St.

Springfield, Ohio



In This Test A Hayton 4" Turbo-Centrifugal Pump Showed an Efficiency of 85%



This test shows that Hayton Turbo-Centrifugal Pumps operate with an efficiency that cannot be equalled with either centrifugal or plunger pumps. The Hayton Turbo-Centrifugal pump will maintain its theoretical head when pumping approximately at full capacity.

We make a point to submit actual running tests of Hayton Pumps for approval before shipment. We will then guarantee the pump to operate as the test claims it will. Let us mail you our 16-page bulletin.

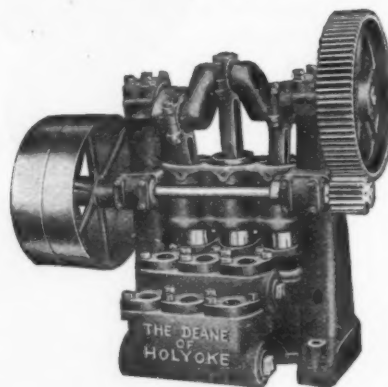
Send us your name and address.

HAYTON PUMP CO., - QUINCY, ILL.

DEANE POWER PUMPS

ARE THE BEST

PUMPS for Boiler Feeding, Elevator Work, Railway Tank Service, Sugar House, Rolling Mill or Any Service



Our Line is the Most Complete in the World

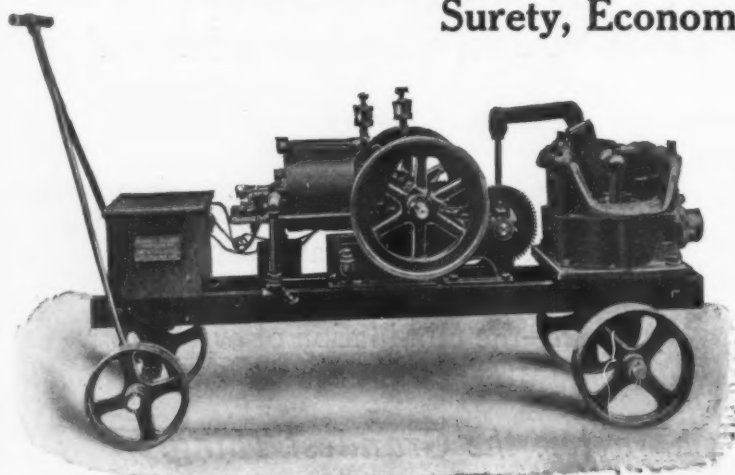
WRITE FOR OUR BULLETIN D58-29



Offices in all Principal Cities.

D180.2

For Use in Sewer and Water Departments, Trenches, Excavations, Pier Foundations—in Fact, Wherever a Small Pump Is Needed, the Atlantic Diaphragm Pumping Engine Acts with Surety, Economy, Precision.



That's the whole story in a nutshell. It isn't mere manufacturer's claims. It's the distilled history of that large number of contractors now using the **Atlantic Diaphragm Pumping Engine**. The results of actual use on the job, given us by men whose judgment is always gauged by the dollar, ought to be final. But before an Atlantic goes out, it is tested by us in a more rigid manner than could be given on a job.

If you want efficiency in pumping, 24 hours a day, at the lowest possible cost, with practically no human attention, just try the **Atlantic Diaphragm Pumping Engine**, remembering that it will return the original cost in about 14 days. Cost of maintenance and for wear and tear almost a

negative quantity. (Telegraph code word "Atlapump.")

Write us today for free copy of "Where the Profit Comes In"—gives condensed facts.

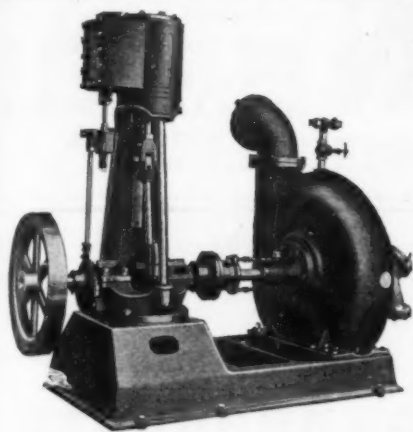
IMPORTANT NOTICE

Make your hand diaphragm pumps pay by attaching them to the **Atlantic Pumping Engine**. We have a special offer to make to those who want to utilize their present pumps. Write for particulars.

HAROLD L. BOND COMPANY

383-391 S. Atlantic Avenue, Boston, Mass.

CHARLES F. BLOUNT, Southern Agent, Atlanta, Ga.



A SAND-GRAVEL-DREDGING PUMP

to be desirable, must be well-built, heavy in all parts, and thoroughly well-built. We follow these lines and have been successful. May we not tell you more about them? We build a complete line.

ERIE PUMP & ENGINE WORKS, ERIE, PA.

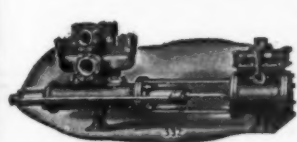
THE JOHN H. MCGOWAN CO.

BUILDERS OF

SINGLE



DUPLEX



PUMPS

FOR

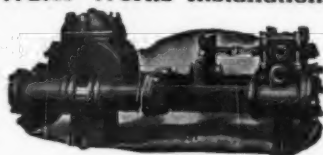


Mills, Mines, Phosphate Plants, Power Stations and Water Works Installations

BOOKLETS

303

SINGLE PUMPS



PAMPHLETS

313

DUPLIX PUMPS

CINCINNATI, O.

DON'TS FOR BUYERS

Don't fail to buy from advertisers in the MANUFACTURERS RECORD as they are the most representative firms seeking Southern business.

Don't forget to mention the MANUFACTURERS RECORD when writing to them.

R. D. WOOD & CO.

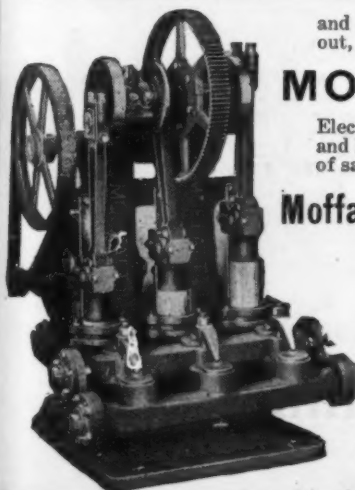
400 Chestnut Street, Philadelphia, Pa.

CENTRIFUGAL PUMPS

ALL SIZES, BELT DRIVEN AND DIRECT CONNECTED

For Irrigation, Tanneries, Mine Drainage, Phosphate Mining, Circulating Water for Condensers, &c., &c.

THE PUMP OF THE HOUR



and hour after hour, day in and day out, will do the work intended—is the

MOFFATT PUMP

Electric and Power Driven, Triplex and Deep Well. All sizes. Hundreds of satisfied users. Write us.

Moffatt Machinery Mfg. Co.

CHARLOTTE, N. C.

BRANCHES

328-330 Monroe Ave., Memphis, Tenn.
306 Commerce Bldg., Birmingham, Ala.
911 E. Main St., Richmond, Va.
98 Holt St., Norfolk, Va.
325 E. California St., Oklahoma City, Okla.
15 Forsyth St., Atlanta, Ga.
120 Martha St., Montgomery, Ala.
213 Main St., Jacksonville, Fla.
743 Ellis St., Augusta, Ga.
509 Second St., Macon, Ga.
138-140 Dorsiere St., New Orleans, La.
2320 Fourth St., Meridian, Miss.
1-3 Ann St., New York City.



To Manufacturers:

Let us figure with you on your springs.

We are thoroughly equipped to handle specifications for all kinds of springs, made to suit the most exacting requirements of elasticity, temper, strength and durability. We make all shapes and tempers, adapted to every use, and with large capacity can promptly deliver.

We can assist you in adapting standard forms, or figure new designs in flat or round steel. Our experience is at your disposal in any way that we may be of service. We solicit the favor of your inquiries.

Springs Catalogue furnished upon application.

We Make

American Wire Rope	Barbed Wire
Aeroplane Wire and Strand	Woven Wire Fencing
Piano Wire	Fence Gates
Mattress Wire	Steel Fence Posts
Weaving Wire	Concrete Reinforcement
Broom Wire	Springs
Fence Wire	Sulphate of Iron
Flat Wire	Poultry Netting
Flat Cold Rolled Steel	Wire Rods
Wire Hoops	Juniata Horse Shoes
Electrical Wires and Cables	and Calks
Rail Bonds	Shafting Cold Drawn Steel
Bale Ties, Tacks, Nails, Staples, Spikes	Wire of Every Description

We have separate catalog for each of these. Gladly furnished upon application.

American Steel & Wire Co.'s Sales Offices

CHICAGO	12 West Adams Street	DENVER	First Nat'l Bank Bldg.
NEW YORK	30 Church Street	SALT LAKE CITY	
WOBURN	91 Grove Street		736 South Red West Street
BOSTON	120 Franklin Street	SAN FRANCISCO	1614 & Folsom Sts.
PITTSBURGH	First Building	PORTLAND	10th & Irving Sts.
CINCINNATI	Union Trust Building	SEATTLE	4th Ave., S. & Comm. St.
CLEVELAND	Western Reserve Bldg.	LOS ANGELES	
DETROIT	First Building		Jackson & Central Avenues
ST. LOUIS	Third Nat'l Bank Bldg.	NEW YORK	United States Steel
MONTREAL	Bank of Ottawa Bldg.	Providence, R.I.	30 Church St.
ST. PAUL-MINNEAPOLIS			Export Representatives
	Pioneer Building, St. Paul		

Adopted by majority of
Cotton Mills
as a cleanser having the
Best Value.

SAVOGRAN

U.S. GOV'T STANDARD CLEANING POWDER.

Accepted as the most economical and efficient for all cleansing purposes.
INDIA ALKALI WORKS
BOSTON, MASS.
Makers for 36 Years.



The American Cotton Oil Co.

27 BEAVER STREET,

CABLE ADDRESS:
"AMCOTOIL," NEW YORK.

NEW YORK CITY.

COTTONSEED PRODUCTS

OIL, STEARINE, CAKE, MEAL, LINTERS, ASHES, HULLS.

The Celebrated **I. X. L. COOKING OIL.**

The STANDARD and the BEST.

Made in Refineries at
NEW YORK, CINCINNATI, ST. LOUIS, MEMPHIS, NEW ORLEANS.
Pure Food Law Guaranteed under Serial No. 2593.

HYDRAULIC PRESSES

For Any Purpose

DIAMETER OF RAM, 2 INCHES TO 30 INCHES OR MORE.

HYDRAULIC STEAM, DUPLEX PUMPS VARIOUS SIZES, HIGH AND LOW PRESSURES

BELTED POWER PUMPS.

COTTON SEED OIL MACHINERY.

THE CARDWELL MACHINE CO., Richmond, Va., U. S. A.

THE best rings that experience can produce that money can buy are the **DOUBLE BURNISHED** rings & the **DIAMOND FINISHED** rings made by the
WHITINSVILLE SPINNING RING CO
WHITINSVILLE MASS.

FACTORY TIME CHECKS



No other system has proved so simple, so inexpensive to install and so satisfactory in operation as the **TIME CHECK SYSTEM**. Our pamphlet, "Time Checks and Their Use," is well worth the three minutes necessary for a reading.

Address Dept. J

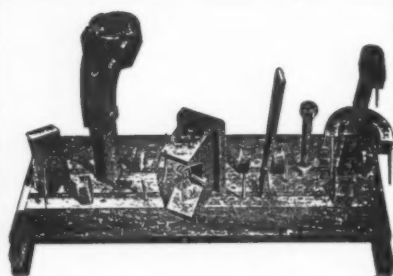
American Railway Supply Co.
24 Park Place, New York

Manufacturer of all sorts of
Stamped and Embossed Metal Work

Hotel checks, key tags, door numbers and badges. Breast and hat badges for electric and steam road employees, police and fire departments, etc.

Complete Catalogue Free.

American Railway Supply Co.
Address Dept. J
24 Park Place, New York



DIXIE ELECTRO MAGNETS

ARE NOW USED BY

COTTON SEED OIL MILLS COTTON MILLS
SUGAR CANE MILLS FLOUR and GRIST MILLS
FERTILIZER PLANTS

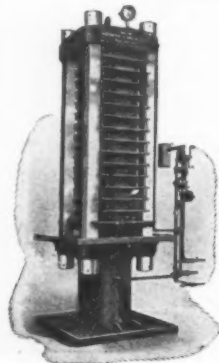
To Remove Scrap Iron From Any and All Materials

MANUFACTURED BY

DIXIE ELECTRO MAGNET CO.
MEMPHIS, TENN.

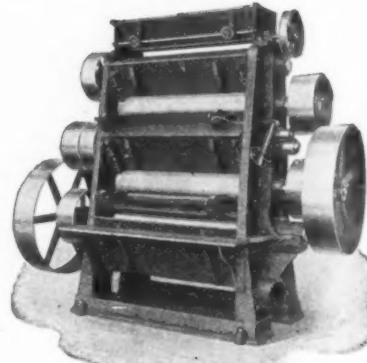
COMPLETE LINE OF IMPROVED Cotton Seed Oil Mill Machinery

Everything Necessary for the Press Room



STEEL PRESS

Rolls
Power Pumps
Steel Press Cylinders
Job Cotton Seed Huller
Cotton Seed Presses
Continuous Cookers
Hydraulic Cake Formers
Safety Press Boxes
Cake Cooler
Seed Dryer
Automatic Change Valves
Accumulators
Faherty Huller Knives
Cake Trimmers
Cake Packers
Hydraulic Fittings



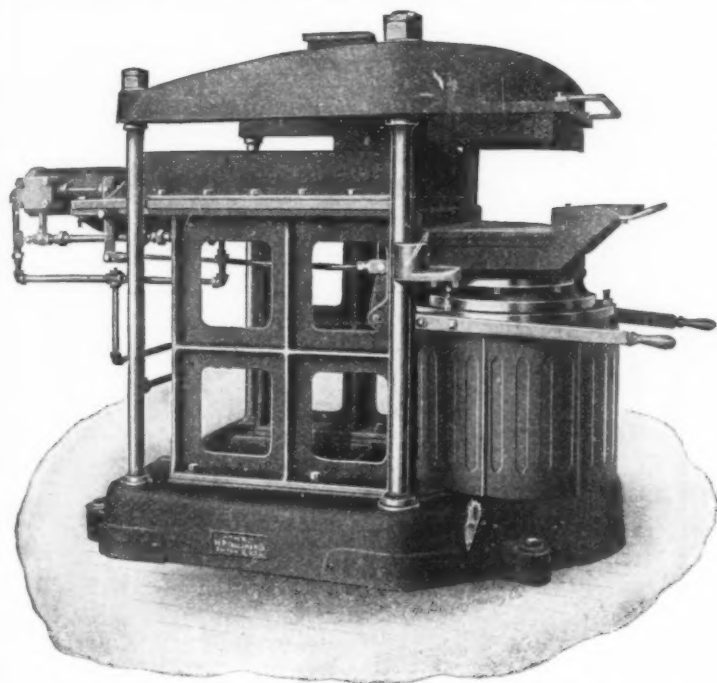
CRUSHING ROLLS

WRITE US FOR PRICES

The French Oil Mill Machinery Co.
PIQUA, OHIO

REPRESENTATIVES: { MR. PAUL WATSON, Galveston, Texas.
MR. W. P. FERGUSON, Empire Building, Atlanta, Ga.

The Maker of Cotton Seed Oil



needs the most economical machinery if he wants to make money.

One of the best is the

Callahan Improved Self-Charging Steam Cake Former

Notice that it is a self-charger, and that it is operated by steam.

It works fast, and one man can handle it.

The cake is always perfectly even throughout, and has no thin, soft edges.

The Machine has an automatic locking device which makes its operation certain and prevents "monkeying."

Write for circular describing this machine in detail. It will make interesting reading to any oil mill man who wants the most efficient plant.

THE W. P. CALLAHAN CO.

Inventors and Manufacturers of Complete Oil Mill Equipments of All Capacities

DAYTON, OHIO

REPRESENTATIVES: The De Marco-Fulford Co., Atlanta, Ga.

Anderson Oil Expeller

Better Oil, Better Cake,
Lower Operating Cost.

This is a Winning Combination

Installations throughout the South are steadily increasing, and if you will look into the facts you will easily see why. Works whole seed or separated meats



Each machine is an unit in itself, and to increase your equipment, all you have to do is to add units. Let us tell you all about it.

Burruss Engineering Company
ATLANTA, GA.

Western Engineering Co., Dallas, Tex.
Agents for Texas and Oklahoma

Kitson Products

Blowing Systems

for conveying bale cotton
from storehouse to picker room

Lappers and
Cleaning Trunks
Self-Feeding Openers
Waste-Working Machinery
Raw Stock Cotton Dryers

We own the Patterns and can furnish Repair Parts for Pickers
formerly built by

WHITEHEAD & ATHERTON, - Lowell, Mass.
ATHERTON MACHINE CO., - Lowell, Mass.
A. T. ATHERTON MACHINE CO., - Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

Saves Space
and Machinery
CARVER



**SAND AND
BOLL
SHAKER**

(With Seed
Cleaner)

Combines
feeder, sand and
boll shaker, and
seed cleaner, all
in one machine.
Makes seed-
house clean, and
saves valuable
space.

If wanted, we
furnish it with a
feeder minus a

beater roll, which reduces height of machine one foot.

Two sizes, 60 and 120 tons.

Let us tell you all about it.

Carver Cotton Gin Company
E. Bridgewater, Mass.

Atlanta, Office,
1018 Empire Building

A. A. Vardell,
179 Main St., Dallas, Tex.

NORTHROP LOOMS

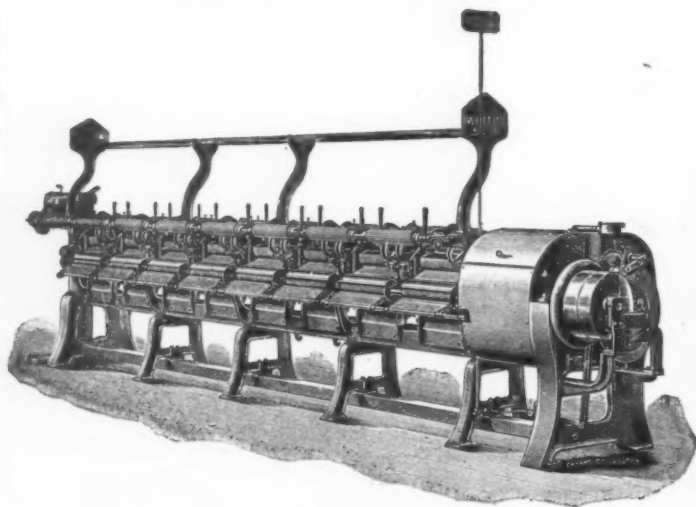
Solve the Labor Problem,
Make an Easier Job for the Weaver
And
Earn Larger Dividends
for the Mill.

DRAPER COMPANY
HOPEDALE, MASS.

J. D. CLOUDMAN
Southern Agent
40 So. Forsyth St.
Atlanta, Ga

**THE WHITIN MACHINE WORKS
COTTON MACHINERY**

Whitinsville, Mass.



Comber

... We Build ...

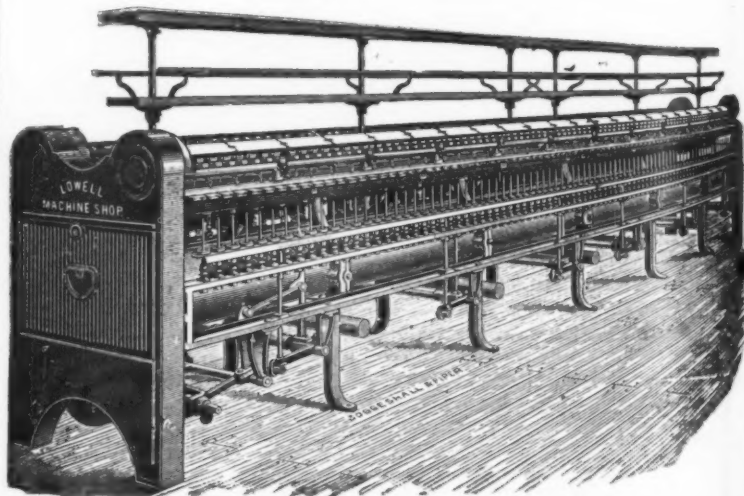
CARDS
COMBERS
DRAWING FRAMES
ROVING FRAMES
SPINNING FRAMES

SPOOLERS
TWISTERS
REELS
LONG CHAIN QUILLERS
LOOMS

SOUTHERN AGENT: S. W. CRAMER
Charlotte, N. C.

**COTTON
MACHINERY**

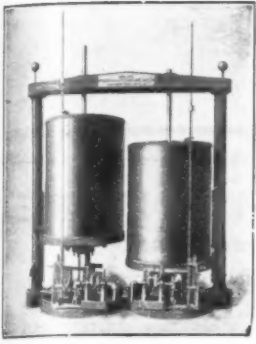
LOWELL MACHINE SHOP
LOWELL, MASS.



Cards, Railway Heads, Drawing Frames, Fly Frames, Ring Frames
Spoolers, Warpers, Slashers, Looms, Twistors,
Reels and Cloth Room Machinery.

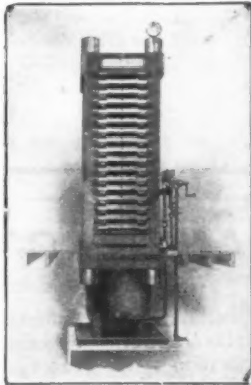
THE
Buckeye Iron & Brass Works
DAYTON, OHIO, U. S. A.

Manufacturers of
COTTONSEED OIL MILL
AND
LINSEED OIL MILL
MACHINERY
OF ALL KINDS



ACCUMULATOR

Hydraulic
Presses,
Rolls,
Hydraulic
Pumps,
Cake Formers,
Meal Cookers,
Hulling
and
Cleaning
Machinery,
Cake Breakers,
Attrition Mills,



PRESS

**ACCUMULATORS—The Most Perfect System of
Pressure Application**
THE VERY LATEST IMPROVEMENTS AND THE VERY BEST

**SEAMLESS HOSIERY
Knitting Machines**

that answer every purpose and

LATCH NEEDLES

that are a superior quality are made by

ACME KNITTING MACHINE & NEEDLE CO.
Franklin, N. H.

Philadelphia Office, Knickerbocker Bldg.

DON'TS FOR BUYERS

Don't fail to buy from advertisers in the MANUFACTURERS RECORD as they are the most representative firms seeking Southern business.

Don't forget to mention the MANUFACTURERS RECORD when writing to them.

COTTON MILL EQUIPMENT

Lace Leather and Belt Hooks
Rawhide and Leather Pickers of all kinds
Wire Heddles, Heddle Frames and
Wire Goods
Roll Covering Machinery and Supplies

Shuttles, Spools and Bobbins

Belting, Strapping and Pickers
Loom Harness and Reeds
Fire Hose and Supplies
Textile Mill Supplies

American Supply Co.
PROVIDENCE, R. I.

Revolving
Flat
Cards,
Lap Winders,
Drawing
Frames,
Evener
Drawing

SACO-PETEE COMPANY

NEWTON UPPER FALLS, MASS., U. S. A.

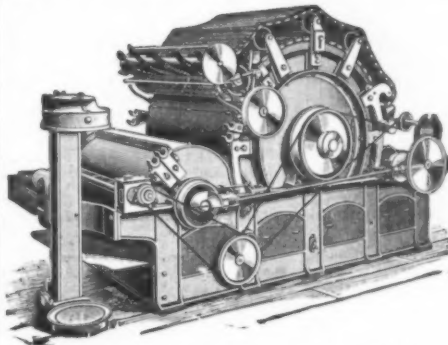
COTTON MACHINERY

Shops { Biddeford, Me.
Newton Upper Falls, Mass.

Southern Agent, A. H. WASHBURN, Charlotte, N. C.

Stubbing,
Intermediate
and Roving
Frames,
Spinning
Frames,
Spoolers
and Reels

COTTON MILL MACHINERY

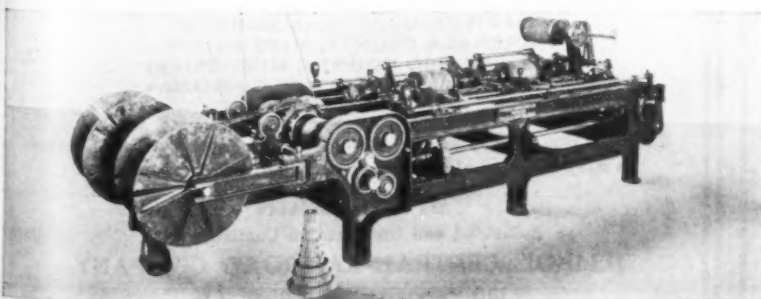


Cards,
Drawing Frames
Railway Heads
Combers' Lappers
Spinning Frames
Mules, Looms

MASON MACHINE WORKS,
TAUNTON, MASS.

Southern Office - - - CHARLOTTE, N. C.

COTTON, TWINE AND ROPE MACHINERY



The Haskell-Dawes Machines are built upon a New Principle, whereby the most Positive Results are secured. They occupy less space than the ordinary type of machines, require Less Relative Power and will turn out a Much Larger Product of Twine and Rope.

The Special Attention of Cotton Manufacturers is called to our new Forming and Rope-Laying Machines.

Descriptive Catalogue sent on Application.

The Haskell-Dawes Machine Co.
176 FEDERAL STREET, BOSTON, MASS.

Cities, Towns and Railroads Inviting Factories.

SAVANNAH, GEORGIA

Fertilizer Manufacturing Center of the South

AND SIXTH LARGEST CITY IN EXPORTS IN THE UNITED STATES

THE LAND OF OPPORTUNITY. I am now offering factory sites which have access to all four railroads entering Savannah, and situated on the Savannah River, the only available water front near the city.

I have also a few choice farming propositions with railroad and water transportation. Write me for information.

FRANK WHITNEY, Room 207 Germania Bank Bldg., SAVANNAH, GA.

THE West Point ROUTE

Atlanta & West Point R. R.

THE WESTERN
RAILWAY OF ALABAMA

Offers excellent locations for

Truck, Fruit, Stock

And General Farming

Available Factory Sites. Abundance of Raw Material and Good Transportation Facilities.

Write for information.

E. S. CENTER

General Agent

EAST POINT, GA.

The Thriving Towns of Georgia

Offer opportunities and untold advantages for every line of business. Situated in the heart of the great COTTON BELT, in a country that is growing by leaps and bounds, and knows no hard times, they offer splendid inducements to merchants, manufacturers, professional men and every man that is willing to work. Correspondence solicited.

Georgia Bureau of Industries
& Immigration

714 Century Bldg. Atlanta, Ga.

THE SOUTH'S "GARDEN SPOT" IS TRAVERSED BY THE ATLANTA, BIRMINGHAM & ATLANTIC RAILROAD

Lands are reasonable in price, very fertile and adaptable to the widest range of crops. Splendid climate and excellent church and school advantages. The territory is attracting general attention throughout the country.

Those desiring to locate will do well to communicate early. Inquiries are invited and literature treating fully with the population, soil conditions, etc., will be promptly mailed.

W. H. LEAHY

GENERAL PASSENGER AGENT

ATLANTA, GA.

MANUFACTORIES INVITED Cheap Electric Power and Labor

Bedford City, Va., offers every advantage to industrial plants generally. Has cheap electric power which is very necessary to profitable manufacturing; has good supply of labor and ample raw material of various kinds within easy reach; and is on railroad connecting with all parts of the country and seaports. Good schools, churches, healthful climate and other facilities and comforts which make it a fine place of residence.

Detailed information gladly given by the

BOARD OF TRADE

BEDFORD CITY, VIRGINIA

WINCHESTER, VIRGINIA

The Center of the Greatest Apple Development
in the United States

SPECIAL OPPORTUNITIES FOR

Cannery, Evaporating and Preserving Plants; Spray Material, Spray Wagons and Orchard Equipment Plants. Brick Plant wanted. On B. & O and Pa. Rys. Full information furnished.

J. E. Correll, Sec. Business Men's Asso., Winchester, Va.

THE HOTEL ESSEX

Opposite South Terminal Station.

BOSTON, MASS.

European Plan.
Rates Moderate.

Absolutely Fireproof.

Free Transfer Baggage from and to Station.

Terminal of Trains from South and West.
Also Plaza Hotel, N. Y.

THE HAMMOND HOTELS

F. A. HAMMOND, President.

Baltimore Steam Packet Co.

OLD BAY LINE,
FOR OLD POINT COMFORT, NORFOLK,
AND PORTSMOUTH,
CONNECTING WITH ALL RAIL LINES
SOUTH AND WEST.

THROUGH TICKETS TO ALL POINTS.
Freight received and forwarded every week-day, and Bills of Lading issued to all points South and West and for Richmond, Norfolk, Portsmouth, Old Point Comfort and Mathews and Gloucester Landings. Splendid Steamers Florida, Virginia or Alabama—finest south of New York, equipped with United Wireless Telegraphy. Leave Company's Pier, Light St., foot of Barre St., daily, including Sunday, at 6.30 P. M.

Tickets to all points and staterooms reserved at Ticket Office, 107 E. Baltimore St.; S. A. L. Ry. Ticket Office, Baltimore and Calvert Sts.; Albaugh's, 2 E. Fayette St., and at 500 Light St.

P. BYRD THOMPSON,

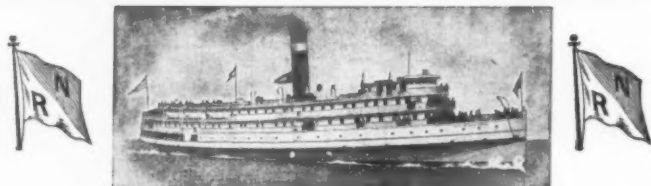
Traffic Manager.

JAMES E. BYRD,

General Passenger Agent.

JOHN R. SHERRWOOD,

President and General Manager.



Week-End Trips on the Chesapeake Line

Delightful week-end trips from Baltimore to Old Point Comfort and Norfolk. The new queens of the Chesapeake, the City of Baltimore and the City of Norfolk, leave Baltimore for Norfolk and vice versa, stopping at Old Point each way, every evening including Sunday, arriving at destination next morning. Week-end tourists can return in ample time for business Monday morning after a day's recreation. Many places in vicinity of Norfolk where a pleasant, healthful Sunday can be passed.

Most palatial steamers on the Chesapeake Bay. Wireless telegraphy. Running water and intercommunicating telephones in each room. State rooms equipped with shower baths, and others connecting with baths. Cuisine unsurpassed.

Chesapeake Steamship Co. GENERAL OFFICES Baltimore, Md.

Attractive Factory Sites

ON THE

ILLINOIS CENTRAL RAILROAD

For full particulars address the undersigned

Free books of information on farm lands issued by the
Illinois Central Railroad

ABOUT THE SOUTH

LOUISIANA RECLAIMED LANDS MAKE
FERTILE FARMS

THE YAZOO MISSISSIPPI VALLEY

LIVE STOCK INDUSTRY IN THE SOUTH

ALFALFA SUCCESSFULLY GROWN IN MISSISSIPPI

MADISON COUNTY, MISSISSIPPI

GRENADA COUNTY, MISSISSIPPI

TISHOMINGO COUNTY, MISSISSIPPI

TANGIPAHOA PARISH, LOUISIANA

WEST TENNESSEE

Everyone who would like a Southern home or investment should have a copy of one or all of these books. For free copies address

J. C. CLAIR

Industrial and Immigration Commissioner

ILLINOIS CENTRAL RAILROAD COMPANY

135 Park Row, CHICAGO, ILL.

Ideal Industrial Investments in "A Land of Resources"

The territory traversed by the Tennessee Central Railroad, the direct connecting link between the Northwest and the Southeast, contains more wealth and diversity of Natural Resources than any other similar railroad mileage, and its development has just commenced.

EVERY VARIETY OF TIMBER

in the South grows along the Tennessee Central. It has received the highest awards from the Louisiana Purchase Exposition to the Appalachian. Therefore, unexcelled opportunities are offered Saw and Planing Mills, Furniture, Box, Handle, Spoke, Hub, Rim, Cedar Pencil, Shuttle, Veneering, Wood Pulp, Tannic Extract, Stave, Heading and every variety of Woodworking Factories.

ITS WEALTH OF MINERALS

Coal, Iron, Phosphate, Oil, Lithograph Stone, Marble, Cement Rock, Limestone, Sandstone, Slate, Clay, Kaolin, Fluorspar, Glass Sand, cannot fail to attract those interested in Mines, Quarries, Furnaces and Factories.

SOIL AND CLIMATE

The Soil produces profitably all the crops—Grains, Grasses, Cotton, Tobacco, Live Stock, Poultry, and Fruits of the South except the sub-tropical. The air and water are absolutely pure. No climatic sickness; no extremes of heat or cold, and where every day is work day. Operatives live cheaply and comfortably. These conditions make Ideal Industrial Locations in "A Land of Resources."

Let me tell you all about it. Address

RUTLEDGE SMITH, Industrial Agent
TENNESSEE CENTRAL RAILROAD
Cookeville, Tennessee

Establish YOUR Business at the Base of Supplies

In Montgomery, Chattanooga, Rome, Atlanta, Macon, Columbus, Birmingham and a number of other cities and towns along the Central of Georgia Railway are factory sites which are ideal from every standpoint.

Your Iron, Coal, Coke, Timber and other raw materials are procurable at the lowest cost and in any quantities you need, as you need them, from immense supplies under your hand on every side. Efficient labor is plentiful, and water power abundant and inexpensive.

The prosperous, loyal community round about supplies a home market of great possibilities. Excellent shipping facilities open the whole country for promotion of sales on a successful competitive basis.

The progress that this district has made along industrial, commercial and agricultural lines during the past few years is but an indication of the prosperity that will mark its future. In it is the rational location for your factory. Any information you desire will be sent gladly and promptly upon request.

Address **J. M. MALLORY**
Savannah, Georgia

INDUSTRIAL AGENT

**CENTRAL OF GEORGIA
RAILWAY**

The Desirability

OF THE

SOUTH

AS THE BEST PLACE TO

Manufacture Cotton Goods

is illustrated in the increase of 67%
quoted by Census Department.

WE CAN OFFER Attractive Situations

for those desiring to enter this field.

J. A. PRIDE

General Industrial Agent Seaboard Air Line Railway
NORFOLK, VIRGINIA

BUSINESS OPPORTUNITIES

There are hundreds of thriving, hustling cities along the Southern Railway, Mobile & Ohio Railroad, Georgia Southern & Florida Railway and Virginia & Southwestern Railway offering excellent openings for wholesale houses, stores, factories of all kinds and investments for capital. Here are a few specific instances of which we would like to give you more particulars.

ADDITIONAL CAPITAL NEEDED by an already well-established industry in a Southeastern town on the Southern Railway. Present capitalization, \$30,000. About \$10,000 additional would put this industry on a solid basis and make the man furnishing the capital executive head of the company. Refer to file 30548.

FACTORY BUILDING FOR SALE. Situated in a rapidly-growing Virginia city, the junction point of three trunk railway lines. Buildings were erected in 1899, and comprise a four-story main building 105x45 feet, of brick, concrete and wood construction, with 17,000 square feet of floor space. Other buildings are boiler, storage and vat houses, bark sheds and brick office. Three acres and all buildings enclosed in 12-foot high-board fence. Some machinery, including 150-horse-power engine and boiler, included with property. Ample fire protection. Seventeen acres of land included in property. All property in good repair. Full particulars and price obtained by referring to file 9640.

GRIST MILL, MILLWRIGHT AND PAINT SHOP OPENING. A prosperous Virginia county-seat of 1500 population in the center of a rich agricultural section, where wheat and corn grow abundantly, is in need of an up-to-date grist mill. Local farmers will lend liberal support. Also a wheelwright and paint shop is needed. A promising opening. Refer to file 38330.

FOR RENT AT REASONABLE RATE: Several large, brick construction factory buildings. Situated in center of manufacturing city. Track connections. Exceptional location for machine shop, foundry or woodworking factories. Refer to file No. 23590.

LANDS FOR COLONIZATION Investors seeking large tracts of land suitable for subdivision and sale to general, fruit or truck farmers should write us.

HOTEL OPENINGS. We have several desirable points for hotel men with capital.

MANUFACTURERS using large quantities of hardwood lumber will find many profitable sites along the Southern Railway.

Take a trip over the Southern Railway lines and see what has been accomplished in the development of manufacturing cities and towns. Put your case in our hands; let us show you the best locations for your new factory. The Southern is the great Industrial Railway of the growing South. Its lines reach from the Potomac and Ohio rivers to the Gulf of Mexico, and from the Atlantic Ocean to the Mississippi River. Somewhere along its tracks is a place for you and your works. Shall we find that place for you?

M. V. RICHARDS, Land and Industrial Agent, Room 52
Southern Ry., Mobile & Ohio R. R., Ga. Southern & Fla. Ry., and Va. & S. W. Ry.
WASHINGTON, D. C.

Texas City, Texas

"Where the Greatest Rail Commerce of the World Must Meet the Greatest Water Commerce of the World"

IT is a generally recognized fact that the great Southwest, and especially the Gulf Coast country of Texas, is now enjoying an era of commercial and industrial development such as has never been known in any section of the country before.

This is not a temporary movement, but grows more active with each passing month.

Do you know the reason why?

The vast, and as yet practically untouched, resources of this section are beginning to attract the attention of capital. Lack of rail and water transportation facilities has rendered it almost impossible heretofore to exploit them. Today a great transformation is taking place.

The railroads of the country are awakening to the fact that, with the opening of the Panama Canal, the tremendous traffic of the South and Southwest will seek an outlet to the sea by way of the Gulf of Mexico. In anticipation of this move—which is even now well under way—they are improving and extending their lines toward the sea.

Waterfront property all along the Gulf Coast is being developed for harbor and terminal purposes.

Result—

Millions upon millions of acres of prairie lands are being converted into farms. Thousands upon thousands of people, lured by the exceptional opportunities to be found here, are pouring into the State every year.

Cities and towns are springing up as if by magic.

A great and growing demand for factory-made goods is being developed.

Factories of every description are building, and the whole territory is developing into an ant heap of human activity.

Texas City, Texas, by reason of its strategic position; the remarkable development of its waterfront for harbor and terminal purposes; the installation of the most modern and comprehensive dock, warehouse and terminal facilities, and the fact that nearly all of the railroads of Texas have their termini at or in the vicinity of this place, is now recognized as "the core of the Gulf Ports movement," and offers the manufacturer opportunities and advantages that cannot be found elsewhere.

Factories of Every Description are a Pressing Necessity of the Great Southwest

By reason of the remarkable development, the tremendous increase in population, and the general forward movement of this section, a great and growing demand for factory-made goods is being created. The factories already located here are unable to keep up with this demand, notwithstanding that they are constantly enlarging and improving their plants. Factories, therefore, are a pressing necessity of this territory. A great many are now locating here, but the field is practically unlimited.

No cash or similar bonuses are offered industries to locate at Texas City. Only self-sustaining institutions are encouraged. To these the Texas City Company, and other companies, offer a few attractive inducements; such as free factory sites, free artesian water, cheap fuel, cheap electrical power, low storage rate and low insurance rate on same, low freight handling charges, and similar other inducements, all of which are of direct benefit to the manufacturer.

COMPARATIVE STATEMENT
of Reg. Tonnage and Tons Cargo of
Vessels
1904 to 1911

	Reg. Tons	Tons Cargo
1904	15,171	8,712
1905	82,214	76,007
1906	102,489	84,315
1907	102,504	77,459
1908	166,203	159,835
1909	234,708	180,003
1910	441,943	352,472
1911	515,964	444,695

Note These Figures

The figures to the right and left serve as an index to the increase in shipping via Texas City during the seven years from 1904 to 1911. Here is an increase in one item alone of over sixty-one hundred per cent. in seven years. It is confidently believed that the value of the commerce via Texas City for 1912 will exceed ONE HUNDRED MILLION DOLLARS.

COMPARATIVE STATEMENT
of Shipping via Texas City
1904 to 1911

	No. Vessels	Value of Cargoes
1904	12	\$ 998,428
1905	87	3,774,515
1906	115	5,738,094
1907	138	6,867,773
1908	199	22,875,732
1909	208	34,138,444
1910	239	47,213,753
1911	255	61,524,263

Literature Distributed by

Texas City Transportation Co.

Texas City, Texas

Opportunities for Cigar Factories in Key West, Florida

There are opportunities open in Key West for the establishment of cigar factories that should prove attractive to those engaged or desiring to engage in that line of industry.

The advantages offered cannot be equalled elsewhere.

First among these is the fact that Key West lies nearer the island of Cuba, home of cigarmaking tobacco, than any other United States city. In climatic conditions, therefore, it more nearly approximates the native element of the raw material.

It is known by those who are expert in the manufacture of cigars that the tobacco, even after it is cured, ought not to be subjected to cold before being rolled into its final shape.

It is also known that the tobacco ought to be kept under the influence of constant and unchanging conditions of atmospheric dampness, to secure the best results in cigar making.

Second among these advantages is the aid and encouragement which the people of Key West stand ready to give those who wish to establish cigar factories in their city.

They know the value of such establishments to their city, they know that they are money-making institutions when properly managed and conducted, and therefore they wish to encourage and assist all such as come among them prepared to put money, brains, experience and energy in the business of cigar-making.

The third advantage is one whose value the alert business man will recognize at a glance.

It is the right it will give him to label his product with the name of Key West.

The extension of the "Over-Sea" railroad into Key West has brought that place into close touch with all parts of the country, relieving it from its position of isolation, to which so many persons objected, and its rapid growth in commerce and manufactures is now assured.

Those applying first for manufacturing sites will naturally be best suited.

The Florida East Coast Railway will furnish information concerning Key West to all who make inquiry.

Florida East Coast Railway

J. E. INGRAHAM, Vice-President

ST. AUGUSTINE, FLA.

Commercial Dairying Along the Clinchfield

Fortune waits to fill the hands of the men who go into the dairying business on a commercial basis on the line of the Carolina, Clinchfield & Ohio Railway.

Along most of its entire length conditions of soil, climate and transportation combine to render it ideal for furnishing to the market large quantities of butter at production-cost not easily met by competitors elsewhere.

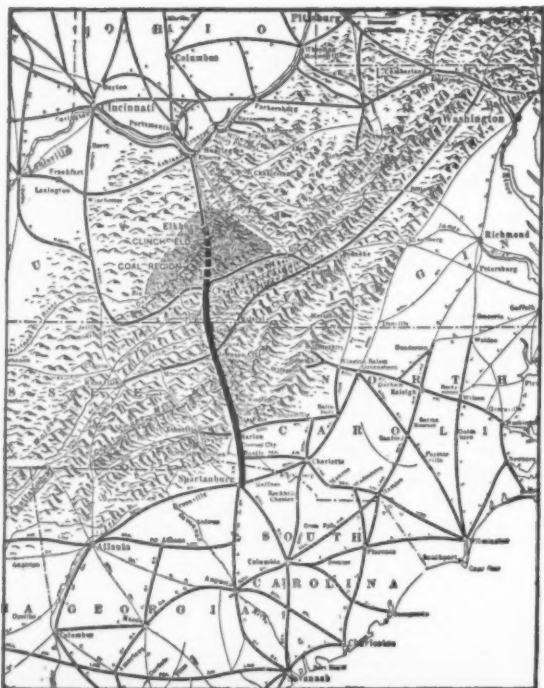
The high lands traversed by the road are natural grass lands, producing abundantly of certain of the most nutritive kinds as soon as the timber is cleared away so that the sun can warm the soil. Other kinds must be planted, but yield equally well where given the opportunity.

Corn, wheat, oats, rye, barley—all these grains grow readily and yield largely throughout the entire territory.

The summers are long, owing to the latitude, but mild because of the altitude; the winters are short and not rigorous, and cows can graze in comfort during practically all the months of the year. This keeps them healthy, and lessens the cost as well. The construction of barns for them is rendered cheap by reason of the cheapness of lumber, as well as by the fact that they need not be made so warm as is necessary farther North.

There is an abundance of running water—clear, pure, sparkling—during the entire year. Every farm can have its own streams fed by never-failing mountain springs.

The Carolina, Clinchfield & Ohio Railway, through its connections with the Louisville & Nashville and the Chesapeake & Ohio, the Norfolk & Western, the Southern and the Seaboard Air Line Railways, puts this entire section in easy touch with the best markets of the country—North, South, East and West—and in these markets there is a continually increasing demand for first-class dairy butter.



Write for a copy of the booklet, "The Land of Opportunities," issued by the Industrial Department of the road.

Carolina, Clinchfield & Ohio Rwy.

"THE ROAD OF OPPORTUNITY"

J. J. Campion,
V.-P. and Traffic Manager

R. F. Brewer,
Industrial Agent

Johnson City, Tenn.

Wonders of West Virginia

In a synopsis covering the resources of West Virginia, Dr. I. C. White, State Geologist, gives the following interesting facts:

"Extending from the Ohio River on the west to within 50 miles of tidewater at Washington, or only 80 miles from Baltimore on the east, she is nearer the great centers of population and manufacturing industry than any other State, and thus possesses natural advantages of immense value in marketing her products.

The central portion of the Appalachian basin, holding the richest coal fields in the world, lies entirely within her area.

Within this zone are found the purest and greatest variety of coals in the United States, or the world, for that matter; useful for every purpose—steam, domestic, coking, gas, splint, cannel, smokeless, low volatile, high volatile, ranging in B. T. U. from 14,000 to 15,500, and underlying 6,000,000 acres, the quantity being conservatively estimated at 160,000,000,000 tons.

West Virginia has 300,000,000 tons of excellent iron ores in close proximity to vast limestone deposits suitable for flux, cement or high grade lime, and near splendid coking coal.

She has enormous resources in clays and shales for every kind of brick—fire, common, pressed; also sewer pipe, roofing tile, and all kinds of pottery ware.

She has the highest grades of glass sand, in boundless quantity, near both coal and natural gas.

She has more high grade petroleum and more natural gas than Pennsylvania.

She has 9,000,000 acres of forests, in 1,500,000 acres of which the woodman's axe is yet unknown.

She has a fertile soil, finely adapted to agriculture, horticulture, grazing and dairying.

Her yields of apples, peaches, pears and all small fruits cannot be excelled anywhere, in either quality or quantity per acre.

Abundant rainfall (45 inches) well distributed throughout the year insures perennial crops, copious springs and great undeveloped water power resources for her rivers."

Through this country of natural richness almost unrivalled, which has been so well described in the above, the Baltimore & Ohio Railroad runs, its various lines tapping the sections in which these resources lie, and connecting them with the seaboard and the great centers of population and of business.

The Industrial Department of the road will furnish detailed information to those who are interested.

Baltimore & Ohio Railroad

W. W. Wood, Industrial Agent

Baltimore, Md.

6,125,000,000 feet of Timber

In 1910 this was the cut in Mississippi and Louisiana. The average price per thousand was \$14.50 in the form it went to market—this means \$88,800,000.

Little of this lumber was used in the condition in which it left the Mississippi and Louisiana mills. It was put through various machines elsewhere, which turned it into siding, flooring, door and window frames and doors and windows, and the many other forms in which lumber is used by builders, or it went through other machines and came out spokes, hubs, axles, tongues or box boards, or through still others that turned it into furniture of the various kinds.

No matter which of these various kinds of machine it was put through, when it came out its value was considerably more than before, and in the case of furniture it increased so much that the first cost of the lumber was a very small proportion of the price of the article into which it was turned.

There is no good reason why furniture should not be manufactured in these States close to the forests in which the timber grows.

Those portions of the tree which are unavailable as lumber solve the power problem by furnishing all the fuel required by the boilers in generating the steam necessary to drive the machinery.

The labor supply in the two States under consideration is ample, and it is composed of people who are tractable, reliable, and free from the restlessness and dissatisfaction that prevail among the employees of so many industrial establishments elsewhere.

The lines of the Illinois Central Railroad and their connections furnish transportation facilities that reach directly into the country's greatest markets.

Besides this, Mississippi and Louisiana are a part of that section of the country in which for the next few years the greatest increase in population will be witnessed, thus furnishing an ever-increasing local market for furniture of all kinds.

The lands upon which these forests stand can now be purchased at prices so low that within a few years the land without the timber will be worth much more than is now asked for both land and timber, so that the timber will be more than clear profit to the man who buys now.

Here, then, meet all the conditions necessary to successful manufacturing enterprises—

Raw material that costs practically nothing, power generated by the use of waste from the mill, an ample supply of reliable labor, a local market with continually increasing purchasing power, transportation facilities that carry direct into all the population centers of the country.

What more can the manufacturer ask? What more can he find?

*Write our
Industrial
Department
For any
Information
Desired.*

Illinois Central Railroad
Chicago, Ill.

*J. C. Clair,
Industrial
and
Immigration
Commissioner,
Chicago, Ill.*

Richmond, Virginia

\$90,000,000

of Manufactured Products

Richmond, Virginia, at the head of navigation on the James River, presents numerous opportunities for the establishment of successful manufacturing plants.

A line of steamers down the James River to Norfolk furnishes water transportation, giving connection with all the world's ports.

Five trunk line railroads entering the city furnish it with railway transportation direct to all the great centers of population and business of this country.

The mines of Virginia and West Virginia, the forests of those states and North Carolina, the cotton fields of Virginia and North Carolina, and the tobacco lands of the surrounding counties furnish it raw material at prices that are not easily duplicated elsewhere.

The Virginia Railway and Power Company is prepared to furnish electric power to manufacturing plants at prices less than the cost at which such plants can generate it.

The manufacturing business is not in its experimental stage in Richmond. The industrial concerns now doing business in the city number close to 1800, and they employ more than 33,000 hands.

Their products, which aggregate a value of more than \$90,000,000 annually find their markets in every civilized country in the world.

The far seeing business man looking for a commercial or industrial location will find that Richmond is especially well located in respect to the South—a section of 30,000,000 people and marvelous resources, the steadily increasing development of which is bringing a constantly growing demand for supplies and materials of every kind.

Richmond is at once the gateway and the commercial capital of the South, bound to it by ties of blood and sympathy no less than by those of physical propinquity.

Richmond therefore enjoys a trade with the people of that section that cannot be easily taken away from her, and which is a guarantee of success to industrial operations properly conducted in this city.

The Virginia Railway and Power Company not only has power to sell at attractive prices to manufacturing plants locating in Richmond, but it can also direct inquirers to a number of the most eligible sites for such plants which can be secured at prices that are right and upon terms that are satisfactory to the purchaser.

If you are contemplating the establishment of a manufacturing business, study the advantages Richmond offers, look at the sites that are for sale and learn the prices at which we will furnish power for operation.

Virginia Railway and Power Company

RICHMOND

PETERSBURG

NORFOLK

PORTSMOUTH

SUFFOLK

VIRGINIA

- Abrasive Materials.**
Abrasive Material Co., Philadelphia, Pa.
Carborundum Co., Niagara Falls, N. Y.
Norton Co., Worcester, Mass.
Vitrified Wheel Co., Westfield, Mass.
- Accountants.**
Baltimore Audit Co., Baltimore, Md.
Cruselle Audit Co., Inc., Atlanta, Ga.
Interstate Audit Co., Washington, D. C.
Neville, Chas., Savannah, Ga.
- Adding Machines.**
Adder Machine Co., Wilkes-Barre, Pa.
Burroughs Adding Machine Co., Detroit, Mich.
- Agents. (Manufacturers.)**
Allen, Herbert F. L., Washington, D. C.
- Agricultural Implements.**
Appomattox Iron Wks. & Sup. Co., Petersburg, Va.
Farquhar Co., Ltd., A. B., York, Pa.
Myers & Bro., F. E., Ashland, O.
- Air Compressors. (Stationary and Portable.)**
Allen, Herbert F. L., Washington, D. C.
American Air Compressor Wks., New York, N. Y.
American Compressor & Pump Co., Baltimore, Md.
Blaisdell Machinery Co., Bradford, Pa.
Chicago Pneumatic Tool Co., Chicago, Ill.
Garner Governor Co., Quincy, Ill.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., New York, N. Y.
Nagle Corliss Engine Wks., Erie, Pa.
Quincy Engine Co., Quincy, Pa.
Union Steam Pump Co., Battle Creek, Mich.
- Air Motors.**
Ingersoll-Rand Co., New York, N. Y.
- Aluminum Products. (Bars, Sheets, Tubes.)**
Aluminum Company of America, Pittsburgh, Pa.
- Aluminum Wheels.**
Norton Company, Worcester, Mass.
- Annealing Boxes.**
Wilfong Iron Works Co., Millard F., Phila., Pa.
- Anti-Friction Metals.**
Bulley-Lebby Co., Charleston, S. C.
Dodge Manufacturing Co., Mishawaka, Ind.
Gilbert & Sons Brass Fdry. Co., St. Louis, Mo.
Phosphor-Bronze Smelting Co., Phila., Pa.
Virginia Railway Supply Co., Norfolk, Va.
- Anti-Rail Creepers.**
Q. & C. Co., New York, N. Y.
- Architects.**
Cain, Shepherd & Peale, Richmond, Va.
Lockwood, Greene & Co., Boston, Mass.
McLaughlin & Johnson, Lynchburg, Va.
Milburn, Helster & Co., Washington, D. C.
Nichols, Charles H., New York, N. Y.
Pettit, Jr., Chas. Godfrey, Danville, Va.
Sirrine, J. E., Greenville, S. C.
- Architects' Supplies.**
Keuffel & Esser, Hoboken, N. J.
Starrett Co., L. S., Athol, Mass.
Weber & Co., F., Philadelphia, Pa.
- Architectural Iron and Sheet Metal Work.**
Bolles Iron & Wire Works, J. E., Detroit, Mich.
Chesapeake Iron Works, Baltimore, Md.
Des Moines Bridge & Iron Co., Des Moines, Ia.
Schreiber & Sons Co., The L., Cincinnati, O.
Snead Architectural Iron Works, Louisville, Ky.
- Art Glass.**
Binawanger & Co., Memphis, Tenn.
- Art Glass and Prisms. (Set in Zinc and Copper.)**
Spreng Art Glass Co., G. A., St. Louis, Mo.
- Asbestos.**
Carolina Portland Cement Co., Charleston, S. C.
Johns-Manville Co., H. W., New York, N. Y.
Southern Pipe Covering Co., Inc., Richmond, Va.
- Asphalt.**
Armistead Mfg. Co., Richmond, Va.
Barber Asphalt Paving Co., Philadelphia, Pa.
Gulf Refining Co., Pittsburgh, Pa.
Texas Co., The, New York, N. Y.
- Asphalt Melters.**
Steubner Iron Wks., G. L., Long Island City, N. Y.
- Automobiles. (Motor Trucks.)**
International Motor Co., New York, N. Y.
- Axles. [See Car Wheels, Axles and Trucks.]**
- Babbitt Metal. [See Anti-Friction Metal.]**
- Badges. (Hat and Breast, Electric and Steam Road, Police and Fire Dept.)**
American Railway Supply Co., New York, N. Y.
- Bakers' Machinery.**
Lynn Superior Co., The, Cincinnati, O.
- Bankers and Brokers.**
Baltimore Trust Co., Baltimore, Md.
Barr, J. H. C., Philadelphia, Pa.
Delaware Trust Co., Wilmington, Del.
Electric Bond & Share Co., New York, N. Y.
Glenn, W. S., Spartanburg, S. C.
Halsey & Co., N. W., New York, N. Y.
Lisman & Co., F. J., New York, N. Y.
Mercantile Trust & Deposit Co., Baltimore, Md.
New First National Bank, Columbus, O.
Nuven & Co., John, Chicago, Ill.
Savannah Bank & Trust Co., Savannah, Ga.
Sieber & Co., H. F., Philadelphia, Pa.
Skinner, Clifford R., Philadelphia, Pa.
Southern States Develop't Co., New York, N. Y.
- Banks.**
First National Bank, Baltimore, Md.
First Nat'l Bank of Key West, Key West, Fla.
Merchants National Bank, Baltimore, Md.
New First National Bank, Columbus, O.
National Exchange Bank, Baltimore, Md.
Savannah Bank & Trust Co., Savannah, Ga.
- Bank and Office Railings and Grilles. (Iron.)**
Bolles Iron & Wire Works, J. E., Detroit, Mich.
Chattanooga Iron & Wire Wks., Chattanooga, Tenn.
Chesapeake Iron Works, Baltimore, Md.
Cincinnati Mfg. Co., Cincinnati, O.
Dow Wire and Iron Works, Louisville, Ky.
Dufur & Co., Baltimore, Md.
Dufur, Baggott & Co., Baltimore, Md.
Meyers Mfg. Co., F. J., Hamilton, O.
Ohio Elevator & Machine Co., The, Columbus, O.
- Bank Fixtures.**
Ruse & Thompson, Baltimore, Md.
- Bar Iron. (Refined and Galvanized.)**
Carnegie Steel Co., Pittsburgh, Pa.
- Bars, Wire, Wire Fabric, etc. (Steel for Concrete-Steel Construction.)**
American Steel & Wire Co., Chicago, Ill.
Cincinnati Iron & Steel Co., Cincinnati, O.
Concrete-Steel Co., The, New York, N. Y.
Concrete-Steel Engineering Co., New York, N. Y.
Franklin Steel Co., Franklin, Pa.
Hoffman & Co., R. C., Baltimore, Md.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
- Bearings. (Ball.)**
Standard Roller Bearing Co., Philadelphia, Pa.
- Bearings. (Brass Journal.)**
Gilbert & Sons Brass Fdry. Co., A., St. Louis, Mo.
- Bearings. (Locomotive and Car.)**
Keystone Bronze Co., Pittsburgh, Pa.
- Bearings. (Oilless.)**
North Amer. Metaline Co., Long Island City, N. Y.
- Bearings. (Roller.)**
Standard Roller Bearing Co., Philadelphia, Pa.
- Bells. (Cast.)**
Holzer-Cabot Electric Co., Boston, Mass.
- Bells and Gongs.**
National Tube Co., Pittsburgh, Pa.
Western Electric Co., New York, N. Y.
- Belting. (Leather, Canvas, Rubber.)**
American Supply Co., Providence, R. I.
Bailey-Lebby Co., Charleston, S. C.
Baltimore Belting Co., Baltimore, Md.
Cameron & Barkley Co., Charleston, S. C.
Chesapeake Belting Co., Baltimore, Md.
Diamond Rubber Co., Akron, O.
Druid Oak Belting Co., Inc., Baltimore, Md.
Gandy Belting Co., Baltimore, Md.
Ladew, Estate Edward R., Glen Cove, N. Y.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
Norwich Belting Co., Norwich, Conn.
Ward-Beebe Co., Washington, D. C.
Williams & Sons, I. B., Dover, N. H.
- Belting. (Chain.)**
Bartlett & Snow Co., C. O., Cleveland, O.
Caldwell & Sons Co., H. W., Chicago, Ill.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Co., Nicetown (Philadelphia), Pa.
Morse Chain Co., Itasca, N. Y.
- Belt Conveyors.**
Jeffrey Mfg. Co., Columbus, O.
Robins Conveying Belt Co., New York, N. Y.
- Belt Dressing.**
Diamond Rubber Co., Akron, O.
Gandy Belting Co., Baltimore, Md.
Ladew, Estate Edward R., Glen Cove, N. Y.
- Belt Fasteners.**
Crescent Belt Fastener Co., New York, N. Y.
- Belt Lacing and Supplies. [See Belting, Leather, Canvas, Rubber.]**
- Bicarbonate Soda. (Sap Stain Lumber Dip.)**
Church & Dwight Co., New York, N. Y.
- Blackboards. (Slate.)**
East Bangor Con. Slate Co., The, East Bangor, Pa.
Hower, J. K., Stratford, Pa.
Johnson, E. J., New York, N. Y.
- Block Tackle. (For Wire or Manila Rope.)**
Patterson Co., W. W., Pittsburgh, Pa.
- Blowers and Exhaust Fans.**
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
De Laval Steam Turbine Co., Trenton, N. J.
General Electric Co., Schenectady, N. Y.
Green Fuel Economizer Co., Mattawoman, N. Y.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
Standard Blower & Metal Mfg. Co., Atlanta, Ga.
Sturtevant Co., B. F., Hyde Park, Mass.
- Blueprints.**
Dixie Blueprint Co., Atlanta, Ga.
- Blueprint Apparatus.**
Keuffel & Esser, Hoboken, N. J.
- Boilers.**
Abendroth & Root Mfg. Co., Newburgh, N. Y.
Babcock & Wilcox Co., New York, N. Y.
Bromwell Co., Dayton, O.
Cameron & Barkley Co., Charleston, S. C.
Casey-Hedges Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Chattanooga, Tenn.
Chicago House Wrecking Co., Chicago, Ill.
Cole Mfg. Co., R. D., Newman, Ga.
Cooper Co., C. & G., Mt. Vernon, O.
Gem City Boiler Co., Dayton, O.
Gilbes Machinery Co., Columbia, S. C.
Hartley Boiler Works, Montgomery, Ala.
Keeler Co., E., Williamsport, Pa.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
Loubard Iron Works, Augusta, Ga.
Mecklenburg Iron Works, Charlotte, N. C.
Murray Iron Works Co., Burlington, Ia.
Oil City Boiler Co., Oil City, Pa.
Petroleum Iron Works, Sharon, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Price Machinery Co., S. M., Norfolk, Va.
Ruemmel-Dawley Mfg. Co., St. Louis, Mo.
Schofield & Sons Co., J. S., Macon, Ga.
Smith-Courtney Co., Richmond, Va.
Southern Engine & Boiler Works, Jackson, Tenn.
Union Iron Works Co., Selma, Ala.
Valk & Murdock Iron Works, Charleston, S. C.
Vogt Machine Co., Henry, Louisville, Ky.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
- Boiler Tubes. [See Tubes, Boiler.]**
- Bolts, Nuts, Rivets, Studs and Washers.**
Milton Mfg. Co., Milton, Pa.
Oliver Iron & Steel Co., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
- Bonds. (Surety, etc.)**
Fidelity & Deposit Co., Baltimore, Md.
- Boring. (Cylinder.)**
Richmond Machine Wks., Inc., Richmond, Va.
Strickland Machine Co., Richmond, Va.
- Bottling Outfits.**
Vilter Mfg. Co., Milwaukee, Wis.
- Box Shooks.**
Naylor & Co., S. E., Gulfport, Miss.
- Brass Goods.**
Bulley-Lebby Co., Charleston, S. C.
Buckeye Iron & Brass Works, Dayton, O.
Kennedy Valve Mfg. Co., Elmira, N. Y.
McKenna Bros. Brass Co., Pittsburgh, Pa.
Powell Co., Wm., Cincinnati, O.
- Brazings. (Cast Iron.)**
Richmond Machine Works, Inc., Richmond, Va.
Strickland Machine Co., Richmond, Va.
- Brass Railings and Grilles, etc.**
McKenna Bros. Brass Co., Pittsburgh, Pa.
- Brewers' Machinery.**
Vilter Mfg. Co., Milwaukee, Wis.
- Brick. (Building.)**
Am. Enamelled Brick & Tile Co., New York, N. Y.
Brookhaven Pressed Brick & Mfg. Co., Brookhaven, Miss.
Fluke & Co., Inc., New York, N. Y.
Hood Brick Co., B. Millin, Atlanta, Ga.
Hydraulic Press Brick Co., St. Louis, Mo.
Koonce Brick & Tile Co., Millersville, Ga.
Pittsburgh-Brick Co., Pittsburgh, Pa.
Sibley-Menge Brick & Coal Co., Birmingham, Ala.
Scott Brick Co., Alex. A., Knoxville, Tenn.
- Brick. (Blast Furnace, Coke Oven.)**
Hood Brick Co., B. Millin, Atlanta, Ga.
- Brick. (Enamelled.)**
Amer. Enam. Brick & Tile Co., New York, N. Y.
- Brick. (Fire Clay.)**
Brookhaven Pressed Brick & Mfg. Co., Brookhaven, Miss.
Fluke & Co., Inc., New York, N. Y.
Kilian Fire Brick Works, Killian, S. C.
Louisville Fire Brick Works, Highland Park, Ky.
Pomona Terra-Cotta Co., Pomona, N. C.
Stevens' Sons Co., H., Macon, Ga.
Taylor Sons Co., Chas., Cincinnati, O.
Union Mining Co., Mt. Savage, Md.
West Virginia Fire Clay Mfg. Co., Pittsburgh, Pa.
- Brick. (Paving.)**
Carlyle Paving Brick Co., Portsmouth, O.
Copeland-Ingles Shale Brick Co., Birmingham, Ala.
West Virginia Fire Clay Mfg. Co., Pittsburgh, Pa.
- Brick. (Silica.)**
Harrison-Walker Refractories Co., Pittsburgh, Pa.
- Brick and Clayworking Machinery and Supplies.**
Carnell, George, Philadelphia, Pa.
Fennholtz Brick Machinery Co., St. Louis, Mo.
Freese & Co., E. M., Gallon, O.
Scott-Madden Iron Works, Keokuk, Ia.
Steele & Sons, J. C., Stateville, N. C.
Taplin-Rice-Clerkin Co., Akron, O.
- Brick Fireplaces. [See Fireplaces, Artistic Brick.]**
- Brickwork. (Artistic.)**
Fluke & Co., Inc., New York, N. Y.
- Bridges. (Concrete.)**
Concrete Steel Engineering Co., New York, N. Y.
Roanoke Bridge Co., Inc., Roanoke, Va.
- Bridges. (Rolling Lift.)**
Scherzer Rolling Lift Bridge Co., Chicago, Ill.
- Bridges.**
American Bridge Co. of New York, New York.
Belmont Iron Works, Philadelphia, Pa.
Champion Bridge Co., Wilmington, Ohio.
Des Moines Bridge & Iron Co., Des Moines, Ia.
Farris Bridge Co., Pittsburgh, Pa.
Memphis Bridge Co., Memphis, Tenn.
Roanoke Bridge Co., Inc., Roanoke, Va.
Scherzer Rolling Lift Bridge Co., Chicago, Ill.
Vincennes Bridge Co., Vincennes, Ind.
Virginia Bridge & Iron Co., Roanoke, Va.
York Bridge Co., York, Pa.
- Bridge and Structural Iron Paints.**
Chattanooga Paint Co., Chattanooga, Tenn.
Dixie Crucible Co., Jersey City, N. J.
Standard Paint Co., New York, N. Y.
- Brimstone.**
Union Sulphur Co., New York, N. Y.
- Buckets. (Excavators.)**
Hayward Co., New York, N. Y.
Monglian Mch. Co., Chicago, Ill.
Steubner Iron Works, G. L., Long Island City, New York, N. Y.
Williams Co., The G. H., Cleveland, O.
- Buckets. (Ore, etc.)**
Brown Hoisting Mch. Co., Cleveland, O.
Caldwell & Son Co., H. W., Chicago, Ill.
Dodge Manufacturing Co., Mishawaka, Ind.
Hayward Co., New York, N. Y.
Link-Belt Co., Nicetown (Philadelphia), Pa.
Smith Co., T. L., Atlanta, Ga.
Williams Co., The G. H., Cleveland, O.
- Bulb Stones.**
Starr Co., B. F., Baltimore, Md.
- Builders and Contractors.**
Falls City Construction Co., Louisville, Ky.
Farris Bridge Co., Pittsburgh, Pa.
Ferro Concrete Construction Co., Cincinnati, O.
Lisle-Dunning Const. Co., Oklahoma City, Okla.
Selden-Breck Construction Co., St. Louis, Mo.
Unit Construction Co., St. Louis, Mo.
Walt & Co., J. G., New York, N. Y.
- Buildings. (Financed and Erected.)**
Falls City Construction Co., Louisville, Ky.
Gulf Coast Construction Co., Houston, Tex.
Lisle-Dunning Const. Co., Oklahoma City, Okla.
- Building Supplies.**
Armistead Mfg. Co., Richmond, Va.
Chicago House Wrecking Co., Chicago, Ill.
Norfolk Building Supplies Corp., Norfolk, Va.
Southern Building Material Co., Norfolk, Va.
- Burners. (Oil.) [See Fuel Oil Equipments.]**
- Bushings. (Oilless, for Loose Pulleys.)**
North Amer. Metaline Co., Long Island City, N. Y.
- Cables.**
American Steel & Wire Co., Chicago, Ill.
Broderick & Bascom Rope Co., St. Louis, Mo.
Roebbing's Sons Co., John A., Trenton, N. J.
Williamsport Wire Rope Co., Williamsport, Pa.
- Cableways. (Overhead Suspension.)**
Broderick & Bascom Rope Co., St. Louis, Mo.
Flory Mfg. Co., S. Bangor, Pa.
Lidgerwood Mfg. Co., New York, N. Y.
Mead-Morrison Mfg. Co., Cambridge, Mass.
Roebbing's Sons Co., John A., Trenton, N. J.
- Can and Box Making Machinery. (Tin.)**
Bliss Co., E. W., Brooklyn, N. Y.
- Cans.**
New Orleans Rfg. & Metal Wks., New Orleans, La.
Southern Can Co., Baltimore, Md.
- Canning Machinery and Supplies.**
Robins & Co., A. K., Baltimore, Md.
Sinclair-Scott Co., Baltimore, Md.
Sprague Canning Machinery Co., Chicago, Ill.
- Carborundum Paper and Cloth.**
Carborundum Co., Niagara Falls, N. Y.
- Card Clothing.**
American Supply Co., Providence, R. I.
- Cars. (Dump, Industrial, Logging and Mine.)**
Austin Mfg. Co., Chicago, Ill.
Baldwin Equipment & Supply Co., Chicago, Ill.
Chase Fdry. & Mfg. Co., Columbus, Ohio.
Georgia Car & Locomotive Co., Atlanta, Ga.
Hunt Co., C. W., West New Brighton, N. Y.
Males Co., Cincinnati, O.
Oliver Mfg. Co., Wm. J., Knoxville, Tenn.
Raleigh Iron Works Co., Raleigh, N. C.
Smith Co., T. L., Atlanta, Ga.
Steubner Iron Wks., G. L., Long Island City, N. Y.
Union Iron Works, Selma, Ala.
Western Wheelbarrow Scraper Co., Aurora, Ill.
- Cars. (Passenger and Freight.) [See Railroad Equipment and Supplies.]**
- Car Couplers and Knuckles.**
Safety Car H't'g & L'ght'g Co., New York, N. Y.
- Car Lighting and Heating.**
Safety Car H't'g & L'ght'g Co., New York, N. Y.
- Car Wheels, Axles and Trucks.**
Carnegie Steel Co., Pittsburgh, Pa.
Oliver Mfg. Co., Wm. J., Knoxville, Tenn.
Union Iron Works, Selma, Ala.
- Castings. (Aluminum.)**
Aluminum Company of America, Pittsburgh, Pa.
- Castings. (Brass and Bronze.)**
Gilbert & Sons Brass Fdry. Co., A., St. Louis, Mo.
Keystone Bronze Co., Pittsburgh, Pa.
Phosphor-Bronze Smelting Co., Phila., Pa.
Richmond Machine Works, Inc., Richmond, Va.
Stratton & Bragg Co., Petersburg, Va.
Triumph Electric Co., Cincinnati, O.
- Castings. (Iron, Gray, etc.)**
Columbian Iron Works, Chattanooga, Tenn.
Georgia Car & Locomotive Co., Atlanta, Ga.
Glanmorgan Pipe & Foundry Co., Lynchburg, Va.
McWane Pipe Works, Lynchburg, Va.
Poole Engineering & Machine Co., Baltimore, Md.
Roanoke Iron Works, Inc., Roanoke, Va.
Yodine Conveying Belt Co., New York, N. Y.
Stratton & Bragg Co., Petersburg, Va.
U. S. Cast Iron Pipe & Fdy. Co., New York, N. Y.
Valk & Murdock Iron Works, Charleston, S. C.
Westbrook Elevator Co., Danville, Va.
- Castings. (Malleable Iron and Steel.)**
Missouri Malleable Iron Co., East St. Louis, Ill.
- Castings. (Steel.)**
Crucible Steel Castings Co., Lansdowne, Pa.
Hoffman & Co., R. C., Baltimore, Md.
Reliance Steel Casting Co., Pittsburgh, Pa.
- Ceilings. (Metal.)**
Chattanooga Rfg. & Fdy. Co., Chattanooga, Tenn.
Edwards Manufacturing Co., Cincinnati, O.
Harry Steel Co., O. K., St. Louis, Mo.
Kelley Metal Cell. & Mfg. Co., S. Pittsburgh, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Cement.**
Alpha Portland Cement Co., Easton, Pa.
Clinchfield Portland Cem. Corp., Kingsport, Tenn.
Dixie Portland Cement Co., Chattanooga, Tenn.
Hartman Cement Co., Inc., Wm. G., Philadelphia, Pa.
Ironton Portland Cement Co., Ironton, O.
Kirkpatrick Sand & Cem. Co., Birmingham, Ala.
Kosmos Portland Cement Co., Inc., Louisville, Ky.
Lehigh Portland Cement Co., Allentown, Pa.
Security Cement & Lime Co., Baltimore, Md.
Southern States Portland Cem. Co., Rockmart, Ga.
Standard Portland Cement Co., Leeds, Ala.
Tidewater Portland Cement Co., Baltimore, Md.
- Cement Machinery.**
Aising Engineering Co., J. B., New York, N. Y.
Power & Mining Machinery Co., Cudahy, Wis.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
- Chain Blocks.**
Ford Chain Block & Mfg. Co., Philadelphia, Pa.
- Chains. (Dredge, Quarry, Steam Shovel.)**
Weimer Chain & Iron Co., Lebanon, Pa.
- Channeles.**
Ingersoll-Rand Co., New York, N. Y.
- Checks, Metal. (Factory, Time and Mds.)**
American Railway Supply Co., New York, N. Y.
- Chemists.**
Burn, Harry, Birmingham, Ala.
Davis, Geo. C., Philadelphia, Pa.
Froehling & Robertson, Richmond, Va.
Lawrence, James C., Memphis, Tenn.
McKenna, Dr. Chas. F., New York, N. Y.
Payne, Jas. H., Yorktown, Va.
- Chimneys. (Steel-Concrete.)**
Specialty Eng. Co., Houston, Tex.
Weber Chimney Co., Chicago, Ill.
- Chloride Accumulator.**
Electric Storage Battery Co., The, Phila., Pa.
- Chucks.**
Morse Twist Drill & Mch. Co., New Bedford, Mass.
- Cities and Towns. (Commercial and Industrial Opportunities.) [See Industrial, Agricultural and Commercial Opportunities.]**
- Clayworking Machinery. [See Brick and Clayworking Machinery.]**
- Cleansing Compound. (Floors, etc.)**
India Alkali Works, Boston, Mass.
- Clocks. (Time Recorders.)**
Kaiser, Louis E., Baltimore, Md.

- Clocks. (Watchman.)**
Holster-Cabot Electric Co., Boston, Mass.
Kaiser, Louis B., Baltimore, Md.
- Clutches.**
Dodge Manufacturing Co., Milwaukee, Ind.
Positive Clutch & Pulley Works, Buffalo, N. Y.
- Coal.**
Alabama Coal & Iron Co., Birmingham, Ala.
Cinchfield Coal Corp., Danville, Va.
Cinchfield Fuel Co., Spartanburg, S. C.
Consolidation Coal Co., Inc., New York, N. Y.
Flat Top Fuel Co., Bluefield, W. Va.
Pittsburgh-Buffalo Co., Pittsburgh, Pa.
Tennessee Coal, Iron & R. R. Co., B'ham, Ala.
- Coal Cutters.**
Ingersoll-Rand Co., New York, N. Y.
Jeffrey Mfg. Co., Columbus, O.
- Coal Handling Machinery.**
Bartlett & Snow Co., C. O., Cleveland, O.
Brown Hoisting Mch. Co., Cleveland, O.
Hayward Co., New York, N. Y.
Hunt Co., C. W., West New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Co., Nicetown (Philadelphia), Pa.
Mead-Morrison Mfg. Co., Cambridge, Mass.
Robins Conveying Belt Co., New York, N. Y.
Williams Co., The G. H., Cleveland, O.
- Coal Tar and By-Products.**
Barrett Mfg. Co., Philadelphia, Pa.
- Coke.**
Alabama Coal & Iron Co., Birmingham, Ala.
Flat Top Fuel Co., Bluefield, W. Va.
Pittsburgh-Buffalo Co., Pittsburgh, Pa.
Tennessee Coal, Iron & R. R. Co., B'ham, Ala.
- Concrete Construction. (Steel Reinforcement.)**
American Steel & Wire Co., Chicago, Ill.
Brown Hoisting Machinery Co., Cleveland, O.
Concrete-Steel Co., The New York, N. Y.
Concrete Steel Engineering Co., New York, N. Y.
Ferro Concrete Construction Co., Cincinnati, O.
Foster-Creighton-Gould Co., Nashville, Tenn.
Jeffrey Mfg. Co., Columbus, O.
Reichert Mfg. Co., Milwaukee, Wis.
Specialty Eng. Co., Houston, Tex.
Unit Construction Co., St. Louis, Mo.
- Concrete Curb Protection. (Steel.)**
Steel Protected Concrete Co., Philadelphia, Pa.
- Concrete Dams.**
Amburn Hydraulic Const. Co., Boston, Mass.
Hydraulic Properties Co., New York, N. Y.
- Concrete Forms. (Metal.)**
Belcher Mfg. Co., Milwaukee, Wis.
- Concrete Mixers.**
Jeffrey Mfg. Co., Columbus, O.
Marshall-Capron Mfg. Co., Chicago, Ill.
Smith Co., T. L., Atlanta, Ga.
Standard Scale & Supply Co., Pittsburgh, Pa.
- Concrete Pile. (Corrugated.)**
The Underground Const. Co., St. Louis, Mo.
- Concrete Reinforcing Bars.**
Carnegie Steel Co., Pittsburgh, Pa.
Concrete-Steel Co., The New York, N. Y.
Concrete Steel Engineering Co., New York, N. Y.
Franklin Steel Co., Franklin, Pa.
- Concrete Ties.**
Universal Concrete Tie Co., New Orleans, La.
- Condensers.**
Alberger Condenser Co., New York, N. Y.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Westinghouse Machine Co., Pittsburgh, Pa.
York Mfg. Co., York, Pa.
- Conductor Pipe.**
Edwards Mfg. Co., Cincinnati, O.
Hussey & Co., C. G., Pittsburgh, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Contractors. (Hydro-Electric Developments.)**
Multiple Arch Hyd. Const. Co., Spartanburg, S. C.
- Contractors' Machinery and Supplies. (See also Hoisting Machinery.)**
American Engineering Co., Philadelphia, Pa.
American Hoist & Derrick Co., St. Paul, Minn.
American Locomotive Co., New York, N. Y.
Austin Mfg. Co., Chicago, Ill.
Case Threshing Mch. Co., Inc., J. I., Racine, Wis.
Clyde Iron Works, Duluth, Minn.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Exeter Machine Works, Pittsford, Pa.
Flory Mfg. Co., S., Bangor, Pa.
Hyde Bros. & Co., Pittsburgh, Pa.
Ingersoll-Rand Co., New York, N. Y.
Males Co., Cincinnati, O.
Marine Metal & Supply Co., New York, N. Y.
Maryland Equipment & Supply Co., Baltimore, Md.
Mead-Morrison Mfg. Co., Cambridge, Mass.
Nonigian Mch. Co., Chicago, Ill.
Oliver Mfg. Co., Wm. J., Knoxville, Tenn.
Pickett Co., Inc., H. W., Philadelphia, Pa.
Pipe & Contractors' Supply Co., New York, N. Y.
Robins Conveying Belt Co., New York, N. Y.
Smith Co., T. L., Atlanta, Ga.
Steubner Iron Works, G. L., Long Island City, New York, N. Y.
- Conveying Machinery.**
Bartlett & Snow Co., C. O., Cleveland, O.
Brown Hoisting Mch. Co., Cleveland, O.
Caldwell & Son Co., H. W., Chicago, Ill.
Dodge Manufacturing Co., Milwaukee, Ind.
Flory Mfg. Co., S., Bangor, Pa.
Hayward Co., New York, N. Y.
Hunt Co., C. W., West New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Lidgerwood Mfg. Co., New York, N. Y.
Link-Belt Co., Nicetown (Philadelphia), Pa.
Mead-Morrison Mfg. Co., Cambridge, Mass.
McLanahan-Stone Mch. Co., Hollidaysburg, Pa.
Robins Conveying Belt Co., New York, N. Y.
- Cooling Towers.**
Alberger Condenser Co., New York, N. Y.
Bammell-Walby Mfg. Co., St. Louis, Mo.
- Cordage.**
American Mfg. Co., New York, N. Y.
Brodick & Buscon Rope Co., St. Louis, Mo.
Columbian Rope Co., Auburn, N. Y.
International Cotton Mills Corp., New York, N. Y.
Plymouth Cordage Co., North Plymouth, Mass.
- Cooperage Stock and Box Shook Machinery.**
Peter Gerlach Co., Cleveland, O.
- Cordage Machinery.**
Haskell-Dawes Machinery Co., Boston, Mass.
- Corn-Mill Machinery.**
Nordley & Marmon Co., Indianapolis, Ind.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
Starr Co., B. F., Baltimore, Md.
Wolf Co., Chambersburg, Pa.
- Cotton Duck.**
International Cotton Mills Corp., New York, N. Y.
- Cotton Oil and Products.**
American Cotton Oil Co., New York, N. Y.
- Cotton Yarns. (Commission Merchants.)**
Paulson, Linkroum & Co., New York, N. Y.
- Cotton-Gin Machinery.**
Carver Cotton Gin Co., East Bridgewater, Mass.
Continental Gin Co., Birmingham, Ala.
Gibbs Machinery Co., Columbia, S. C.
- Cotton-Mill Machinery.**
American Mach. & Mfg. Co., Charlotte, N. C.
American Supply Co., Providence, R. I.
Draper Co., Hopedale, Mass.
Kittson Machine Shop, Lowell, Mass.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Saw-Petite Co., Newton Upper Falls, Mass.
Whitinsville Works, Whitinsville, Mass.
Whitinsville Spinn'g Ring Co., Whitinsville, Mass.
- Cotton-Mill Supplies.**
American Supply Co., Providence, R. I.
Whitinsville Spinn'g Ring Co., Whitinsville, Mass.
- Cottonseed-Oil Machinery.**
Buckeye Iron & Brass Works, Dayton, O.
Burruss Engineering Co., Atlanta, Ga.
Callahan Co., W. P., The Dayton, O.
Cardwell Machine Co., Richmond, Va.
Carver Cotton Gin Co., East Bridgewater, Mass.
Continental Gin Co., Birmingham, Ala.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
- Couplings.**
American Spiral Pipe Works, Chicago, Ill.
Brown Co., A. & F., New York, N. Y.
Caldwell Co., Inc., W. E., Louisville, Ky.
Dodge Manufacturing Co., Milwaukee, Ind.
Golden's Foundry & Machine Co., Columbus, Ga.
Sinclear Scott Co., Baltimore, Md.
Wood's Sons, T. B., Chambersburg, Pa.
- Couplings. (Car.)**
Weimer Chain & Iron Co., Lebanon, Pa.
- Couplings. (Hose, Air, Gas, Steam and Water.)**
National Tube Co., Pittsburgh, Pa.
- Coverings. (Pipe, Boiler, etc.)**
Carolina Portland Cement Co., Charleston, S. C.
Johns-Manville Co., H. W., New York, N. Y.
Southern Pipe Covering Co., Inc., Richmond, Va.
- Cowls.**
Pullman Auto. Ventilator Mfg. Co., York, Pa.
- Cranes. (Locomotive.)**
American Hoist & Derrick Co., St. Paul, Minn.
Brown Hoisting Machinery Co., Cleveland, O.
Exeter Machine Works, Pittsford, Pa.
Ohio Locomotive Crane Co., Bucyrus, O.
- Cranes. (Traveling, Hand, Power, Hydraulic.)**
Brown Hoisting Machinery Co., Cleveland, O.
Hayward Co., New York, N. Y.
Lane Mfg. Co., Montpelier, Vt.
Northern Engineering Works, Detroit, Mich.
Spindel, J. G., Reading, Pa.
- Crayons.**
Lowell Crayon Co., Lowell, Mass.
- Crematories. (Garbage.)**
Specialty Eng. Co., Houston, Tex.
- Cresosoted Wood Block. (Contractors for Laying.)**
Cresosoted Wood Block Pav. Co., New Orleans, La.
- Cresosoting Works.**
Gulfport Cresosoting Co., Gulfport, Miss.
Internat'l Cresosot'g & Cons. Co., Galveston, Tex.
National Lumber & Creos. Co., Texarkana, Ark.
Southern Cresosoting Co., Ltd., Slidell, La.
Southern Wood Preserving Co., Atlanta, Ga.
- Crossarms and Pins.**
Carroll Electrical Co., Raleigh, N. C.
Internat'l Cresosot'g & Cons. Co., Galveston, Tex.
Southern Cresosoting Co., Ltd., Slidell, La.
Western Electric Co., New York, N. Y.
- Crossings. (See Railroad Frogs and Switches.)**
- Crosstie Machine.**
Standard Cross Tie Mch. Co., New Orleans, La.
- Crossties.**
Internat'l Cresosot'g & Cons. Co., Galveston, Tex.
National Lumber & Creos. Co., Texarkana, Ark.
Southern Cresosoting Co., Ltd., Slidell, La.
Universal Concrete Tie Co., New Orleans, La.
- Crossties. (Reinforced Concrete.)**
Universal Concrete Tie Co., New Orleans, La.
- Crossties. (Steel.)**
Carnegie Steel Co., Pittsburgh, Pa.
- Crushers. (Corn and Cob.)**
Gardner Crusher Co., New York, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
Williams Pat. Crusher & Pulv. Co., Chicago, Ill.
- Crushers. (Rock.)**
American Pulverizer Co., St. Louis, Mo.
Austin Mfg. Co., Chicago, Ill.
Case Threshing Mch. Co., Inc., J. I., Racine, Wis.
Cresson Co., Geo. V., Philadelphia, Pa.
Gardner Crusher Co., New York, N. Y.
Power & Mining Machinery Co., Cudahy, Wis.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
Smith Co., T. L., Atlanta, Ga.
Universal Road Mch. Co., Kingston, N. Y.
Western Wheeled Scraper Co., Aurora, Ill.
- Crushing and Pulverizing Machinery.**
Alding Engineering Co., J. R., New York, N. Y.
American Pulverizer Co., St. Louis, Mo.
Austin Mfg. Co., Chicago, Ill.
Bartlett & Snow Co., C. O., Cleveland, O.
Cresson Co., Geo. V., Philadelphia, Pa.
Gardner Crusher Co., New York, N. Y.
Jeffrey Mfg. Co., Columbus, O.
McLanahan-Stone Mch. Co., Hollidaysburg, Pa.
Power & Mining Machinery Co., Cudahy, Wis.
Pratt Engineering & Mch. Co., Atlanta, Ga.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
Walker & Elliott, Wilmington, Del.
Williams Pat. Crusher & Pulv. Co., Chicago, Ill.
Western Wheeled Scraper Co., Aurora, Ill.
- Culverts. (Corrugated Metal.)**
American Rolling Mill Co., Middletown, O.
Canton Culvert Co., The Canton, O.
Dixie Culvert & Metal Co., Atlanta, Ga.
Harry Bros. Co., Newport, Ky.
Harry Steel Co., O. K., St. Louis, Mo.
Kentucky Culvert Mfg. Co., Buechel, Ky.
New Orleans Rfg. & Metal Wks., New Orleans, La.
North Carolina Metal Culv. Co., Greensboro, N. C.
Roanoke Bridge Co., Roanoke, Va.
Tennessee Metal Culvert Co., Nashville, Tenn.
Virginia Metal & Culvert Co., Inc., Roanoke, Va.
- Culverts. (Vitrified Pipe.)**
Bibb Sewer Pipe Co., Macon, Ga.
Stevens Sons Co., H., Macon, Ga.
- Cupola Furnaces.**
Northern Engineering Works, Detroit, Mich.
Faxon Co., J. W., Philadelphia, Pa.
Petroleum Iron Works Co., Sharon, Pa.
- Custom House Brokers.**
Howard & Co., Savannah, Ga.
- Cuts. (Half-tone, Line, etc.)**
Baltimore Maryland Engr. Co., Baltimore, Md.
- Cutter Heads. (Woodworking.)**
Shimer & Sons, Samuel J., Milton, Pa.
- Cutter Grinders.**
Abrasive Material Co., Philadelphia, Pa.
Vitrified Wheel Co., Westfield, Mass.
- Dams. (Multiple Arch Masonry.)**
Multiple Arch Hydraulic Const. Co., Ltd., Spartanburg, S. C.
- Dams. (Reinforced Concrete.)**
Amburn Hydraulic Const. Co., Boston, Mass.
Hydraulic Properties Co., New York, N. Y.
- Derricks and Derrick Fittings.**
American Hoist & Derrick Co., St. Paul, Minn.
Mordican Machinery Co., Chicago, Ill.
National Hoisting Engine Co., Harrison, N. J.
- Designers and Illustrators. (Printed Matter.)**
Baltimore Maryland Engr. Co., Baltimore, Md.
- Ditching Machinery.**
American Hoist & Derrick Co., St. Paul, Minn.
American Locomotive Co., New York, N. Y.
Fairbanks Steam Shovel Co., Marion, O.
Hayward Co., The New York, N. Y.
Marion-Oscod Co., Marion, O.
Marion Steam Shovel Co., Marion, O.
Moughan Machine Co., Chicago, Ill.
Williams Co., The G. H., Cleveland, O.
- Doors. (Birch Veneered.)**
Massee & Felton Lumber Co., Macon, Ga.
- Doors. (Steel Rolling.)**
Kinneer Mfg. Co., Columbus, O.
- Doors. (Tin Clad.)**
Victor Mfg. Co., Newburyport, Mass.
- Doors, Partitions. (Metallic.)**
Dahlstrom Metallic Door Co., Jamestown, N. Y.
- Doors, Sash and Blinds.**
Columbus Iron Works Co., Columbus, Ga.
Massee & Felton Lumber Co., Macon, Ga.
Norfolk Building Supplies Corp., Norfolk, Va.
- Draftsmen's Supplies.**
Keuffel & Esser, Hoboken, N. J.
Weber & Co., F., Philadelphia, Pa.
- Dredge Chains.**
Weimer Chain & Iron Co., Lebanon, Pa.
- Dredge Cutters.**
Northern Engineering Co., Philadelphia, Pa.
- Dredges. (See Excavating Machinery.)**
- Drills. (Pneumatic.) (See also Drills, Rock and Mining.)**
- Drills. (Prospecting.)**
Fort Wayne Electric Works, Madison, Wis.
Ingersoll-Rand Co., New York, N. Y.
Keystone Steam Well Mach. Co., Beaver Falls, Pa.
- Drills. (Rock and Mining.)**
Chicago Pneumatic Tool Co., Chicago, Ill.
Fort Wayne Electric Works, Madison, Wis.
Independent Pneumatic Tool Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Wickes Bros., Jersey City, N. J.
- Drills. (Twist.)**
Manning, Maxwell & Moore, Inc., New York, N. Y.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
- Drive Well Points and Well Supplies.**
National Tube Co., Pittsburgh, Pa.
- Drop Forgings.**
American Spiral Pipe Works, Chicago, Ill.
- Drop Forging Machinery.**
Bliss Co., E. W., Brooklyn, N. Y.
- Drying Machinery.**
American Blower Co., Detroit, Mich.
American Process Co., New York, N. Y.
Bailey-Leiby Co., The Charleston, S. C.
Buffalo Forge Co., Buffalo, N. Y.
Ruggles-Coles Engineering Co., New York, N. Y.
Sturtevant Co., B. F., Hyde Park, Mass.
- Drykilns.**
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Union Iron Works Co., Selma, Ala.
- Dumbwaiters.**
Hollister Whitney Co., Quincy, Ill.
Sidney Elevator & Mfg. Co., Sidney, O.
Spindel, J. G., Reading, Pa.
- Dump Wagons and Wagon Boxes.**
Case Threshing Mch. Co., Inc., J. I., Racine, Wis.
Eagle Wagon Works, Auburn, N. Y.
Troy Wagon Works Co., Troy, O.
- Dust-Collecting Systems.**
Buffalo Forge Co., Buffalo, N. Y.
Standard Blower & Metal Mfg. Co., Atlanta, Ga.
- Dynamite.**
du Pont de Nemours Powder Co., E. I., Wilmington, Del.
- Dynamics and Motors. (Steam Turbine.)**
De Laval Steam Turbine Co., Trenton, N. J.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Terry Steam Turbine Co., New York, N. Y.
Western Electric Co., New York, N. Y.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
- Enaves. (Trough.)**
Edwards Mfg. Co., Cincinnati, O.
Hussey & Co., C. G., Pittsburgh, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Ejectors. (Auto. Sewage.)**
Blaisdell Machinery Co., Bradford, Pa.
- Electric Machinery. (Dynamoes, Generators, Motors, etc.)**
Allis-Chalmers Co., Milwaukee, Wis.
American Engine Co., Bound Brook, N. J.
American Machine Co., Louisville, Ky.
Crockett-Wheeler Co., Amper, N. J.
Engberg's Elect. & Mch. Wks., St. Joseph, Mich.
Fairbanks, Morse & Co., Chicago, Ill.
- Fort Wayne Electric Works, Fort Wayne, Ind.**
General Electric Co., Schenectady, N. Y.
Gregory Electric Co., Chicago, Ill.
Heer Engine Co., Portsmouth, Ohio.
Kentucky Electrical Co., Inc., Owensboro, Ky.
Lee Electric Co., Baltimore, Md.
Miller-Owen Elec. Co., Pittsburgh, Pa.
Piedmont Electric Co., Asheville, N. C.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Robbins & Myers Co., Springfield, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant Co., B. F., Hyde Park, Mass.
Triumph Electric Co., Cincinnati, O.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
- Electrical Contractors, Instruments and Supplies.**
American Mach. & Mfg. Co., Charlotte, N. C.
Crocker-Wheeler Co., Amper, N. J.
Electrical Engineers' Equip. Co., Chicago, Ill.
Engberg's Elect. & Mch. Wks., St. Joseph, Mich.
Fort Wayne Electric Works, Ft. Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Gregory Electric Co., Chicago, Ill.
Johns-Manville Co., H. W., New York, N. Y.
Kentucky Electrical Co., Inc., Owensboro, Ky.
Lee Electric Co., Baltimore, Md.
Lery, Deronde, Columbus, Ga.
Neville, Wm. H., New Orleans, La.
Piedmont Electric Co., Asheville, N. C.
Robbins & Myers Co., Springfield, O.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
- Electrical Power-House Supplies.**
Electrical Engineers' Equip. Co., Chicago, Ill.
- Electro Magnet. (See Magnet Electro.)**
- Elevating, Conveying and Power Transmission Machinery. (See also Conveying Mch. and Power Transmission Mch.)**
Jeffrey Mfg. Co., Columbus, O.
- Elevators.**
Albro-Clem Elevator Co., Philadelphia, Pa.
American Machine Co., Louisville, Ky.
Cincinnati Elevator Co., James H., Cincinnati, O.
Hollister-Whitney Co., Quincy, Ill.
Kansas City Elevator Mfg. Co., Kansas City, Mo.
Moffatt Machinery Mfg. Co., Charlotte, N. C.
Ohio Elevator & Machine Co., Columbus, O.
Otis Elevator Co., New York, N. Y.
Sidney Elevator & Mfg. Co., Sidney, O.
Spindel, J. G., Reading, Pa.
Warsaw Elevator Co., Baltimore, Md.
Westbrook Elevator Co., Danville, Va.
- Elevator Safety Appliances.**
Roth Elevator Safety Co., Inc., Baltimore, Md.
- Elevator Buckets.**
Caldwell & Son Co., H. W., Chicago, Ill.
Dodge Mfg. Co., Milwaukee, Ind.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Co. (Nicetown), Philadelphia, Pa.
- Elevator Enclosures and Cabs.**
Bolles Iron & Wire Works, I. E., Detroit, Mich.
Cincinnati Mfg. Co., Cincinnati, O.
Dow Wire and Iron Works, Louisville, Ky.
Dufur & Co., Baltimore, Md.
Dufur, Baggott & Co., Baltimore, Md.
Meyers Mfg. Co., The Fred J., Hamilton, O.
Ohio Elevator & Machine Co., The Columbus, O.
Otis Elevator Co., New York, N. Y.
Southern Wire and Iron Mfg. Co., Dallas, Tex.
- Elevator Rope. (See Wire Rope.)**
- Elevator Safety Gates.**
Richmond Safety Gate Co., Richmond, Ind.
- Emery Wheels. (See Grinding Wheels.)**
- Engineers—**
CONSULTING.
Angle, Geo. W., New York, N. Y.
Barstow & Co., W. S., New York, N. Y.
Fols, F. Julius, Lexington, Ky.
Graham, Edgar M., Muskogee, Okla.
Hill, Norman A., Baltimore, Md.
Judson Engineering Co., H. S., Savannah, Ga.
Lawrence, James C., Memphis, Tenn.
Lewis, Fred H., Birmingham, Ala.
Lide, Martin J., Birmingham, Ala.
Macfarren, S. J., Washington, D. C.
Myers & Co., Ernest L., Dallas, Tex.
Nichols, Charles H., New York, N. Y.
Payne, Jas. H., Yorktown, Va.
Quick, Alfred M., Baltimore, Md.
- DESIGNING—CONSTRUCTING.**
Barstow & Co., W. S., New York, N. Y.
Brindley Co., New York, N. Y.
Foster-Creighton-Gould Co., Nashville, Tenn.
Gulf Coast Constr. Co., Houston, Tex.
Hague, John, St. Louis, Mo.
Harlow Co., James H., Baltimore, Md.
Judson Engineering Co., H. S., Savannah, Ga.
Klotz, B. G., San Antonio, Tex.
Specialty Eng. Co., Houston, Tex.
Stone & Webster Eng. Co., Boston, Mass.
Summers & Co., L. L., Chicago, Ill.
White & Co., J. G., New York, N. Y.
- DESIGNING, CONSTRUCTING, POWER PLANTS, ETC.**
Brindley Co., New York, N. Y.
Day & Zimmermann, Philadelphia, Pa.
Emory & Eisenberg, Philadelphia, Pa.
Lea, Henry L., Chicago, Ill.
Lockwood, Greene & Co., Boston, Mass.
MacLachlan Eng. Co., J. H., Baltimore, Md.
Manning-Hughes Co., Camden, S. C.
Mellor Furnace Engineering Co., Philadelphia, Pa.
Mole, H. E., New York, N. Y.
Multiple Arch Hyd. Const. Co., Ltd., Spartanburg, S. C.
Neville, Wm. H., New Orleans, La.
Quick, Alfred M., Baltimore, Md.
Sirmine, J. E., Greenville, S. C.
Spiker, Wm. C., Atlanta, Ga.
Virginia Bridge & Iron Co., Roanoke, Va.
Waltfield, Geo. H., Richmond, Va.
- DRAINAGE.**
Brindley Co., New York, N. Y.
- EFFICIENCY.**
Macfarren, S. J., Washington, D. C.
- ELECTRIC, CIVIL, ETC.**
Arnold Co., The Chicago, Ill.
Brindley Co., New York, N. Y.
Brown, S. D., Chattanooga, Tenn.
Crocker-Wheeler Co., Amper, N. J.
Drane, Brent S., Charlotte, N. C.
Emory & Eisenberg, Philadelphia, Pa.
Krellholz, P. O., Baltimore, Md.
Leete-Maupin Engineering Co., Huntington, W. Va.
Lewis, Fred H., Birmingham, Ala.
Lide, Martin J., Birmingham, Ala.
Manning-Hughes Co., Camden, S. C.
Mole, H. E., New York, N. Y.
Potter, Alexander, New York, N. Y.
Ridding & Howard, Baltimore, Md.
Rucker, B. Parks, Charlotte, N. C.
Waldo, W., Houston, Tex.
White & Co., J. G., New York, N. Y.
Whitfield, Geo. H., Richmond, Va.
Young Co., C. S., San Antonio, Tex.

Engineers—

GAS.
Les, Henry L., Chicago, Ill.
GEOLOGICAL.
Bureau of Assoc. Geological Engineers, Boston, Mass.
Davis, Geo. C., Philadelphia, Pa.
Fols, F. Julius, Lexington, Ky.
Froehling & Robertson, Richmond, Va.

HYDRAULIC, SANITARY AND SEWERAGE.
Brindley Co., New York, N. Y.
Brown, S. D., Chattanooga, Tenn.
Harlow Co., James H., Baltimore, Md.
Hutton, T. Chaikley, Wilmington, Del.
Leete-Maupin Engineering Co., Huntington, W. Va.
Nanning-Hughes Co., Camden, S. C.
McCrary Co., The J. B., Atlanta, Ga.
Multiple Arch Hydraulic Const. Co., Ltd., Spar-tanburg, S. C.
Myers, E. W., Greensboro, N. C.
Pew, Arthur, Atlanta, Ga.
Specialty Eng. Co., Houston, Tex.
Tucker & Laxton, Charlotte, N. C.

ICE AND REFRIGERATING.
Hague, John, St. Louis, Mo.
Taft-Nordmeyer Eng. Co., St. Louis, Mo.

ILLUMINATING.
Holophane Co., Newark, Ohio.

LANDSCAPE.
Drane, Brent S., Charlotte, N. C.
Reding & Howard, Baltimore, Md.

**REINFORCED CONCRETE CONSTRUCTION, BUILD-
INGS, BRIDGES, ETC.**
Concrete Steel Engineering Co., New York, N. Y.
Gardner & Howe, Memphis, Tenn.

WATER-WORKS.
Myers, E. W., Greensboro, N. C.

Engines.
GAS AND GASOLINE.
Blaisdell Machinery Co., Bradford, Pa.
Bogart Gas Power Eng. Co., Buffalo, N. Y.
Fairbanks, Morse & Co., Chicago, Ill.
Heer Engine Co., Portsmouth, Ohio.
International Harvester Co. of America, Chicago, Illinois.
Mietz, A., New York, N. Y.
Novo Engine Co., Lansing, Mich.
Otto Gas Engine Works, Philadelphia, Pa.
Power Mfg. Co., Lima, Ohio.
Quincy Engine Co., Quincy, Pa.
Standard Gas Power Co., Atlanta, Ga.
Westinghouse Machine Co., The, Pittsburgh, Pa.
Van Duzen, Royce & Co., Columbus, O.

OIL.
Covington Mch. Co., New York, N. Y.
Mietz, A., New York, N. Y.
Power Mfg. Co., Lima, O.

Engines. (Steam.)
Allis-Chalmers Co., Milwaukee, Wis.
American Blower Co., Detroit, Mich.
American Engine Co., Bound Brook, N. J.
American Hoist & Derrick Co., St. Paul, Minn.
Ball Engine Co., Erie, Pa.
Baltimore Machine Works, Baltimore, Md.
Brownell Co., Dayton, O.
Buffalo Forge Co., Buffalo, N. Y.
Cameron & Barkley Co., Charleston, S. C.
Chicago House Wrecking Co., Chicago, Ill.
Cooper Co., C. & G., Mt. Vernon, O.
Engberg's Elect. & Mech. Wks., St. Joseph, Mich.
Gibbs Machinery Co., Columbus, Ohio.
Griffith & Wedge Co., The, Zanesville, O.
Harrisburg Fdy. & Mach. Wks., Harrisburg, Pa.
Houston, Stanwood & Gamble Co., Cincinnati, O.
Leffel & Co., James, Springfield, O.
Lombard Iron Works, Augusta, Ga.
Mecklenburg Iron Works, Charlotte, N. C.
Morris Machine Works, Baldwinville, N. Y.
Murray Iron Works Co., Burlington, Ia.
Nagle Corliss Engine Wks., Erie, Pa.
Oil City Boiler Co., Oil City, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Price Machinery Co., S. M., Norfolk, Va.
Ridgway Dynamo & Engine Co., Ridgway, Pa.
Schodde's Sons Co., J. S., Macon, Ga.
Smith-Courtney Co., Richmond, Va.
Southern Engine & Boiler Works, Jackson, Tenn.
Sturtevant Co., B. F., Hyde Park, Mass.
Union Iron Works Co., Selma, Ala.
Vilter Mfg. Co., Milwaukee, Wis.
Westinghouse Machine Co., Pittsburgh, Pa.

Envelopes. (Stationery.)
Young & Selden Co., Baltimore, Md.

Excavating Machinery. (Steam Shovels, etc.)
American Locomotive Co., New York, N. Y.
Baldwin Equipment & Supply Co., Chicago, Ill.
Bucyrus Co., So. Milwaukee, Wis.
Fairbanks Steam Shovel Co., Marion, O.
Hayward Co., New York, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Lidgerwood Mfg. Co., New York, N. Y.
Males Co., Cincinnati, O.
Marion-Osgood Co., Marion, O.
Marion Steam Shovel Co., Marion, O.
Monaghan Machine Co., Chicago, Ill.
Norfolk Engineering Co., Philadelphia, Pa.
Williams Co., The G. H., Cleveland, O.

Excelsior Machinery.
Jine, Lewis T., Alpena, Mich.

Exhaust Hoods.
bendroth & Root Mfg. Co., Newburgh, N. Y.
American Spiral Pipe Works, Chicago, Ill.
Zoppes Mfg. Co., Springfield, O.

Exhibits. (Machinery Builders' Equipment and Supplies.)
Builders' Exchange, Baltimore, Md.

Expansion Joints.
Alberger Condenser Co., New York, N. Y.
Zadger & Sons Co., E. B., Boston, Mass.

Explosives.
du Pont-de Nemours Powder Co., E. I., Wilming-ton, Del.

Factory Sites. (Town and Railroad.) [See In-dustrial, Agricultural and Commercial Op-portunities.]

Fans. (Electric.)
Bates & Bros. Co., D. L., Dayton, O.
General Electric Co., Schenectady, N. Y.
Robbins & Myers Co., Springfield, O.
Western Electric Co., New York, N. Y.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.

Fans. (Ventilating.) [See Blowers, Exhaust Fans.]

Fans. (Water and Belt Driven.)
Bates & Bros. Co., D. L., Dayton, O.

Fastener Driving Machine. (Corrugated Joint.)
Baranac Machine Co., St. Joseph, Mich.

Feed-Water Heaters and Purifiers.
Alberger Condenser Co., New York, N. Y.
American Water Softener Co., Philadelphia, Pa.
Blake & Knowles Steam Pump Works, New York, N. Y.

Brownell Co., Dayton, O.
Exeter Machine Works, Pittston, Pa.
Hopkes Mfg. Co., Springfield, O.
McAdoo, Thomas, Philadelphia, Pa.
Murray Iron Works Co., Burlington, Ia.
National Pipe Bending Co., New Haven, Conn.
Seafie & Sons Co., Wm. B., Pittsburgh, Pa.
Stewart Heater Co., Buffalo, N. Y.
Wilmington Iron Works, Wilmington, N. C.

Feed-Water Heater and Purifier and Oil Separator Combined.
Blake & Knowles Steam Pump Works, New York, N. Y.
Stewart Heater Co., Buffalo, N. Y.

Felt. (Building, Sheathing.)
Barrett Mfg. Co., Philadelphia, Pa.

Fencing, Entrance Gates. (Iron, Steel, Wire.)
American Steel & Wire Co., Chicago, Ill.
Bollies Iron & Wire Works, J. E., Detroit, Mich.
Dow Wire and Iron Works, Louisville, Ky.
Dufur & Co., Baltimore, Md.
New Jersey Wire Cloth Co., Trenton, N. J.
Ohio Elevator & Mach. Co., The, Columbus, O.

Fertilizer Machy. [See also Phosphate Machy.]
Pratt Eng. & Mch. Co., Atlanta, Ga.
Smith Co., T. L., Atlanta, Ga.
Valk & Murdock Iron Works, Charleston, S. C.
Walker & Elliott, Wilmington, Del.
Wilmington Iron Works, Wilmington, N. C.

Files.
Barnett Co., G. & H., Philadelphia, Pa.
Delta File Works, Philadelphia, Pa.
Nicholson File Co., Providence, R. I.

Filters. (Water, for Domestic and Industrial Purposes.)

American Water Softener Co., Philadelphia, Pa.
International Filter Co., Chicago, Ill.
Lynn-Superior Co., The, Cincinnati, O.
New York Con. Jewell Fil. Co., New York, N. Y.
Roberts Filter Mfg. Co., Philadelphia, Pa.
Seafie & Sons Co., Wm. B., Pittsburgh, Pa.
Tucker & Laxton, Charlotte, N. C.

Financial Publication.
Financial Review, New York, N. Y.

Fire Alarm Boxes.
Balto. Mch. Products Co. (Relay Station P. O.), Baltimore, Md.

Fire Clay.
West Virginia Fire Clay Mfg. Co., Pittsburgh, Pa.

Fire Clay Brick. [See Brick, Fire Clay.]

Fire Door Fixtures.
Victor Mfg. Co., Newburyport, Mass.

Fire Extinguishers.
Radger & Sons Co., E. B., Boston, Mass.
General Fire Extinguisher Co., Providence, R. I.
Kaiser, Louis E., Baltimore, Md.

Fire Extinguishing Apparatus.
General Fire Extinguisher Co., Providence, R. I.

Fire Escapes.
Bollies Iron & Wire Works, J. E., Detroit, Mich.
Chesapeake Iron Works, Baltimore, Md.

Fireplaces. (Artistic Brick.)
Fiske & Co., Inc., New York, N. Y.

Fireproof Building Construction. (Steel.)
[See Concrete Construction.]

Fireproof Building Material.
Dahlstrom Metallic Door Co., Jamestown, N. Y.
Johns-Manville Co., H. W., New York, N. Y.

Fireproof Doors and Shutters.
Dahlstrom Metallic Door Co., Jamestown, N. Y.
Kinnear Mfg. Co., Columbus, O.
New Orleans Roof & Metal Co., New Orleans, La.
Richmond Safety Gate Co., Richmond, Ind.
Victor Mfg. Co., Newburyport, Mass.

Fireproof Windows. [See Window Frames and Sashes (Fireproof).]

Flanges. (Iron and Steel.)
American Cast Iron Pipe Co., Birmingham, Ala.
American Pipe & Construction Co., Phila., Pa.
American Spiral Pipe Works, Chicago, Ill.
Cameron Steam Pump Wks., A. S., New York, N. Y.
Dart Manufacturing Co., E. M., Providence, R. I.
Glamorgan Pipe & Foundry Co., Lynchburg, Va.
McWane Pipe Works, Lynchburg, Va.
National Tube Co., Pittsburgh, Pa.
U. S. Cast Iron Pipe & Fdy. Co., New York, N. Y.
Wood & Co., R. D., Philadelphia, Pa.

Flexible Joints.
Moran Flex. Steam Joint Co., Inc., Louisville, Ky.

Flooring. (Cement.)
Dagostin & Angelini Bros., Montgomery, Ala.

Flooring. (Hardwood, Maple, Oak.)
Northern Mantel Co., W. J., Memphis, Tenn.
Nashville Hardw'd Flooring Co., Nashville, Tenn.

**Flour and Grist Mill Machinery and Sup-
plies.**
Caldwell & Sons Co., H. W., Chicago, Ill.
Nordyke & Marmon Co., Indianapolis, Ind.
Salem Foundry & Machine Works, Salem, Va.
Starr Co., B. F., Baltimore, Md.
Venich & Co., L. R., Louisville, Ky.
Wolf Co., Chambersburg, Pa.

Flushtank Regulator.
Modern Iron Works, Quincy, Ill.

Foot Valves.
Cameron Steam Pump Wks., A. S., New York, N. Y.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Hyde Park, Mass.

Forgings.
Joliet Forge Co., Joliet, Ill.
Weimer Chain & Iron Co., Lebanon, Pa.

Foundations. (Waterproof.)
Underground Constr. Co., The, St. Louis, Mo.

Foundry Equipment and Supplies.
Paxson Co., J. W., Philadelphia, Pa.

Freight Contractors. (Foreign and Domestic.)
Howard & Co., Savannah, Ga.

Frogs. [See Railroad Frogs and Switches.]

Fuel Economizer.
Green Fuel Economizer Co., Matteawan, N. Y.
Sturtevant Co., B. F., Hyde Park, Mass.

Fuel Oil.
Gulf Refining Co., Pittsburgh, Pa.
Texas Co., The, New York, N. Y.

Fuel Oil Equipment.
Petroleum Iron Works Co., Sharon, Pa.

Fuses, Bases and Fittings.
Johns-Manville Co., H. W., New York, N. Y.

Galvanized Steel and Iron.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
J. C. H. Galvanizing Co., Philadelphia, Pa.
La Belle Iron Works, Steubenville, O.
McCalla, Harold, Philadelphia, Pa.
New Orleans Roof & Metal Co., New Orleans, La.
Wood Iron & Steel Co., Alan, Philadelphia, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

Galvanizing Machinery.
Wilfong Iron Works Co., Millard F., Phila., Pa.

Garages. (Fireproof and Portable.)
Harry Steel Co., O. K., St. Louis, Mo.

Gas Blowers. (Turbine.)
Terry Steam Turbine Co., New York, N. Y.

Gas Compressors.
Blaisdell Machinery Co., Bradford, Pa.
Ingersoll-Rand Co., New York, N. Y.

Gas Engines. [See Engines, Gas.]

Gas Plants.
Western Gas Construction Co., Ft. Wayne, Ind.

Gas Producers.
Bogart Gas Power Eng. Co., Buffalo, N. Y.
Otto Gas Engine Works, Philadelphia, Pa.
Standard Gas Power Co., Atlanta, Ga.
Westinghouse Machine Co., Pittsburgh, Pa.
Wood & Co., R. D., Philadelphia, Pa.

Gasoline and Kerosene.
Gulf Refining Co., Pittsburgh, Pa.
Texas Co., The, New York, N. Y.

Gas and Steam Filters' Tools.
Saunders' Sons, D., Yonkers, N. Y.

Gaskets. (Rubber.)
N. J. Car Spring & Rubber Co., Jersey City, N. J.

Gears.
Albro-Clem Elevator Co., Philadelphia, Pa.
Brown Co., A. & F., New York, N. Y.
Caldwell & Son, Inc., W. E., Louisville, Ky.
Caldwell & Son Co., H. W., Chicago, Ill.
Cresson Co., Geo. V., Philadelphia, Pa.
Dodge Manufacturing Co., Mishawaka, Ind.
Earle Gear & Machine Co., The, Philadelphia, Pa.
Jeffrey Mfg. Co., Columbus, O.
Peole Engineering & Machine Co., Baltimore, Md.
Positive Clutch & Pulley Works, Buffalo, N. Y.

Geologists.
Bureau of Assoc. Geological Engineers, Boston, Mass.
Froehling & Robertson, Richmond, Va.
Glass. (Plate, etc.)
Binswanger & Co., Memphis, Tenn.
Holophane Co., Newark, Ohio.

Governors.
Pickering Governor Co., Portland, Conn.

Grain Elevator Supplies.
Caldwell & Sons Co., H. W., Chicago, Ill.
Dodge Manufacturing Co., Mishawaka, Ind.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Co., Nicetown (Philadelphia), Pa.

Graphite.
Dixon Crucible Co., Joseph, Jersey City, N. J.

Grates and Grate Bars.
Mellor Furnace Engineering Co., Philadelphia, Pa.
Thomas Grate Bar Co., Birmingham, Ala.

Gravel.
Arundel Sand & Gravel Co., Baltimore, Md.
Lathrop & Co., C. P., Richmond, Va.

Grease.
Albany Lubricating Co., New York, N. Y.

Grease Cups.
Albany Lubricating Co., New York, N. Y.

Greases and Lubricating Compounds.
Albany Lubricating Co., New York, N. Y.

Grinders. (Gypsum, Limestone, etc.)
Gardner Crusher Co., New York, N. Y.
Williams Pat. Crusher & Pulv. Co., Chicago, Ill.

Grinding Wheels.
Abrasive Material Co., Philadelphia, Pa.
Carborundum Co., Niagara Falls, N. Y.
Norton Co., Worcester, Mass.
Vitrified Wheel Co., Westfield, Mass.

Groovers.
Hutner Bros. Saw Mfg. Co., Rochester, N. Y.

Gunpowder.
du Pont-de Nemours Powder Co., E. I., Wilming-ton, Del.

Hammers. (Steam, Power, Pneumatic.)
Chicago Pneumatic Tool Co., Chicago, Ill.
Independent Pneumatic Tool Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.

Hand Elevators.
McKenna Bros. Brass Co., Pittsburgh, Pa.
Sidney Elevator Mfg. Co., Sidney, O.

Handle Machinery. [See Woodworking Mch.]

Hangers. [See Pulleys, Shafting and Hangers.]

Hardwood Doors and Trim.
Massee & Felton Lumber Co., Macon, Ga.

Hauling Engines. (Steam Traction.)
Case Threshing Mch. Co., Inc., J. I., Racine, Wis.

Hay Tools.
Myers & Bro., F. E., Ashland, O.

Heater. (Portable, for Bituminous Pavements.)
Buggies-Coles Engineering Co., New York, N. Y.

**Heating Apparatus, Engineers and Con-
tractors.**

American Blower Co., Detroit, Mich.
Buffalo Steam Pump Co., Buffalo, N. Y.
Monitor Steam Generator Mfg. Co., Balto., Md.
Peck-Hammond Co., The, Cincinnati, O.
Richmond Engr. & Mfg. Co., Richmond, Va.
Sturtevant Co., B. F., Hyde Park, Mass.

Hoisting Machinery.
American Engineering Co., Philadelphia, Pa.
American Hoist & Derrick Co., St. Paul, Minn.
Brown Hoisting Mch. Co., Cleveland, O.
Byers Machine Co., John F., Taverana, O.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Exeter Machine Works, Pittston, Pa.
Flory Mfg. Co., S., Bangor, Pa.
Hayward Co., New York, N. Y.
Link-Belt Co., Nicetown (Philadelphia), Pa.
Lidgerwood Mfg. Co., New York, N. Y.
Males Co., Cincinnati, O.
Mead-Morrison Mfg. Co., Cambridge, Mass.
Monaghan Machine Co., Chicago, Ill.
National Hoisting Engine Co., Harrison, N. J.
Novo Engine Co., Lansing, Mich.
Smith Co., T. L., Atlanta, Ga.
Stroudsburg Engine Works, Stroudsburg, Pa.

Hoists.
Ford Chain Block & Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.

Electric.
American Hoist & Derrick Co., St. Paul, Minn.
Lidgerwood Mfg. Co., New York, N. Y.
Monaghan Mch. Co., Chicago, Ill.
Northern Engineering Works, Detroit, Mich.
Patten Mfg. Co., Chattanooga, Tenn.

Pneumatic Motors.
Chicago Pneumatic Tool Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.

Hoops, Bands, etc. (Galvanized.)
J. C. H. Galvanizing Co., Philadelphia, Pa.
McCalla, Harold, Philadelphia, Pa.

Hoops. (Barrel.)
American Steel & Wire Co., Chicago, Ill.
Carnegie Steel Co., Pittsburgh, Pa.

Hose.
Eureka Fire Hose Mfg. Co., New York, N. Y.
N. J. Car Spring & Rubber Co., Jersey City, N. J.

Hotels.
Emerson Hotel, Baltimore, Md.
Hotel Essex, Boston, Mass.

Hot Water Service Heaters.
Alberger Pump Co., New York, N. Y.

Hydrants.
Bourbon Copper & Brass Wks. Co., Cincinnati, O.
Columbian Iron Works, Chattanooga, Tenn.
Glamorgan Pipe & Foundry Co., Lynchburg, Va.
Goulds Mfg. Co., Seneca Falls, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Myers & Bro., F. E., Ashland, O.
Wood & Co., R. D., Philadelphia, Pa.

Hydraulic Giants.
American Spiral Pipe Works, Chicago, Ill.

Hydraulic Rams.
Goulds Mfg. Co., Seneca Falls, N. Y.
Rife Engine Co., New York, N. Y.

Hydrogen.
International Oxygen Co., New York, N. Y.

Icemaking Machinery and Supplies.
Baltimore Machine Works, Baltimore, Md.
Columbus Iron Works Co., Columbus, Ga.
Creamery Package Mfg. Co., De Kalb, Ill.
Frick Co., The, Waynesboro, Pa.
Hager, John, St. Louis, Mo.
Remington Machine Co., Wilmington, Del.
Rummenell-Dawley Mfg. Co., St. Louis, Mo.
Taft-Nordmeyer Eng. Co., St. Louis, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Yost Machine Co., Henry, Louisville, Ky.
York Mfg. Co., York, Pa.

Incorporators. (Companies.)
Delaware Trust Co., Wilmington, Del.
Sieber & Co., H. F., Philadelphia, Pa.

Industrial, Agricultural and Commercial Opportunities.

CITIES AND TOWNS.
Atlanta, Ga., Ga. Bureau of Indus'y & Immig'n.
Baltimore, Md., Gas & Electric Co.
Bedford City, Va., Board of Trade.
Newport News, Va., Old Dominion Land Co.
Texas City, Tex., Texas City Transportation Co.
Winchester, Va., Business Men's League.

RAILROADS.
Atlanta, Birm'g'm & Atlantic R. R., Atlanta, Ga.
Atlanta & W. Point R. R. Co., Montgomery, Ala.
Baltimore & Ohio Railroad, Baltimore, Md.
Carolina, Clinchfield & O. Ry., Johnson City, Tenn.
Central of Georgia Ry. Co., Savannah, Ga.
Florida East Coast Ry., St. Augustine, Fla.
Hudson Central Railroad Co., Chicago, Ill.
Norfolk & Western Railway, Roanoke, Va.
Seaboard Air Line, Portsmouth, Va.
Southern Railway Co., Washington, D. C.
Tennessee Central Railroad Co., Cookeville, Tenn.
Virginia Railway & Power Co., Richmond, Va.

Industrial Minerals.
Howard & Co. (Brokers), Savannah, Ga.

Industrial Track Work. [See Railways, Ind.]

Injectors.
Jenkins Bros., New York, N. Y.
Sellers & Co., Inc., Wm., Philadelphia, Pa.

Insulating Materials.
Johns-Manville Co., H. W., New York, N. Y.

Insurance.
Hartford Fire Insurance Co., Hartford, Conn.
Hartford Steam Boiler Inspection & Ins. Co., Hartford, Conn.
Maryland Casualty Co., Baltimore, Md.

Interior Trim. (Metallic.)
Dahlstrom Metallic Door Co., Jamestown, N. Y.

Iron.
Alabama Coal & Iron Co., Birmingham, Ala.
American Rolling Mill Co., Middletown, O.
La Belle Iron Works, Steubenville, O.
Milton Mfg. Co., Milton, Pa.
Oliver Iron & Steel Co., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Tennessee Coal, Iron & R. R. Co., Birm'g'm, Ala.
Wood Iron & Steel Co., Alan, Philadelphia, Pa.

Irrigation Machinery.
Blakeslee Mfg. Co., Du Quoin, Ill.
Cameron Steam Pump Wks., A. S., New York, N. Y.

Journals. (Financial.)
Financial Review, New York, N. Y.

Kettles. (Drossing, Tinning, Smelting.)
Wilson Iron Works Co., Millard F., Philadelphia, Pa.

Kettles. (Steam Jacket.)
Rodge & Sons Co., E. B., Boston, Mass.
Petroleum Iron Works Co., Sharon, Pa.

Key Seater. (Portable.)
Burr & Son, John T., Brooklyn, N. Y.

Knitting Machinery.
Arne Knitting Mch. & Needle Co., Franklin, N. H.

Lacquers. (All Purposes.)
Dorlacque Mfg. Co., St. Louis, Mo.

Lamp Posts. (Electric, Gas.)
Western Gas Construction Co., Ft. Wayne, Ind.

Lamps. (Arc and Incandescent.)
Columbia Incandescent Lamp Co., St. Louis, Mo.

Lamps. (Incandescent.)
General Electric Co., Schenectady, N. Y.

Lamps. (Incandescent.)
Kentucky Electric Co., Inc., Owensboro, Ky.

Lamps. (Incandescent.)
Lee Electric Co., Asheville, N. C.

Lamps. (Incandescent.)
Western Electric Co., New York, N. Y.

Lamps. (Incandescent.)
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.

Lands. (Mineral, Timber, Farm, etc.)
Barr, J. H. G., Philadelphia, Pa.

Lands. (Mineral, Timber, Farm, etc.)
Frederick & Co., Albert, Brunswick, Ga.

Lands. (Mineral, Timber, Farm, etc.)
Kinbrough & Co., J. T., Atlanta, Ga.

Lands. (Mineral, Timber, Farm, etc.)
Sassum & Co., S. L., Norfolk, Va.

Lands. (Mineral, Timber, Farm, etc.)
Whitney, Frank, Savannah, Ga.

Lath. (Expanded Metal.)
Milwaukee Corrugating Co., Milwaukee, Wis.

Lathes. (Engine.)
Greaves, Klossman & Co., Cincinnati, O.

Lathes. (Engine.)
Manning, Maxwell & Moore, Inc., New York, N. Y.

Lawn Furniture.
Belles Iron & Wire Works, J. E., Detroit, Mich.

Lawn Furniture.
Debur & Co., Baltimore, Md.

Lawn Furniture.
Dufur, Baggett & Co., Baltimore, Md.

Leadite.
Leadite Co., Inc., The, Philadelphia, Pa.

Lighting Equipment.
Hobbs & Co., Newark, Ohio.

Lime.
Security Cement & Lime Co., Baltimore, Md.

Lime.
Tidewater Portland Cement Co., Baltimore, Md.

Lime. (Hydrated.)
Security Cement & Lime Co., Baltimore, Md.

Lime. (Hydrated.)
Tidewater Portland Cement Co., Baltimore, Md.

Limestone Products.
Security Cement & Lime Co., Baltimore, Md.

Liquor Filters.
International Filter Co., Chicago, Ill.

Lithographers, Engravers.
Young & Selden Co., Baltimore, Md.

Loans.
Ames Realization Co., Chicago, Ill.

Lockers. (Metal.)
Erighley Metal Ceiling Mfg. Co., S. Pitts-
burgh, Pa.

Locomotives.
INDUSTRIAL.

Locomotives.
American Locomotive Co., New York, N. Y.

Locomotives.
Baldwin Locomotive Works, The, Philadelphia, Pa.

Locomotives.
Bryn Machine Co., John F., Havenna, O.

Locomotives.
Climax Mfg. Co., Corry, Pa.

Locomotives.
Davenport Locomotive Works, Davenport, Ia.

Locomotives.
Erie Locomotive Works, Erie, Pa.

Locomotives.
Jeffrey Mfg. Co., Columbus, O.

Locomotives.
Lima Locomotive & Machine Co., Lima, O.

Locomotives.
Miles Co., Cincinnati, O.

Locomotives.
Porter Co., H. K., Pittsburgh, Pa.

Locomotives.
Vulcan Iron Works, Wilkes-Barre, Pa.

Locomotives.
RAILWAY.

Locomotives.
American Locomotive Co., New York, N. Y.

Locomotives.
Baldwin Locomotive Works, The, Philadelphia, Pa.

Locomotives.
Lima Locomotive & Machine Co., Lima, O.

Locomotives.
Miles Co., Cincinnati, O.

Locomotives.
Southern Supply Co., Norfolk, Va.

Looms and Weaving Machinery.
Draper Co., Hopedale, Mass.

Looms and Weaving Machinery.
Hass Machine Works, Taunton, Mass.

Lubricants.
Albany Lubricating Co., New York, N. Y.

Lumber.
Industrial Lumber Co., Elizabeth, La.

Lumber.
Hass & Felton Lumber Co., Macon, Ga.

Lumber. (Heavy Construction, Pitch Pine, etc.)
Hass & Felton Lumber Co., Macon, Ga.

Lumber. (Heavy Construction, Pitch Pine, etc.)
National Lumber & Cresset Co., Texarkana, Ark.

Lumber. (Heavy Construction, Pitch Pine, etc.)
Naylor & Co., S. E., Gulfport, Miss.

Lumber. (Yellow Pine.)
Industrial Lumber Co., Elizabeth, La.

Lumber Buggies.
Sole Steam Feed Works, Meridian, Miss.

Lumber Stackers.
Sole Steam Feed Works, Meridian, Miss.

Machinery. (Special.)
Baltimore Machine Works, Baltimore, Md.

Machinery. (Special.)
Bills Co., E. W., Brooklyn, N. Y.

Machinery. (Special.)
Kline, Lewis T., Alpena, Mich.

Machinery. (Special.)
Lester & Co., Charles, Brooklyn, N. Y.

Machinery. (Special.)
Oil City Boiler Co., Oil City, Pa.

Machinery. (Special.)
Rogersford Fdry. & Mch. Wks., Rogersford, Pa.

Machinery. (Special.)
Stratton & Bragg Co., Petersburg, Va.

Machinery. (Special.)
Universal Telegraphic Co., Baltimore, Md.

Machinery and Supplies. (New and Second-
Hand Bargains.)

Machinery and Supplies. (New and Second-
Hand Bargains.)
Beck & Flynn, Ltd., Pittsburgh, Pa.

Machinery and Supplies. (New and Second-
Hand Bargains.)
Boston Iron & Metal Co., Baltimore, Md.

Machinery and Supplies. (New and Second-
Hand Bargains.)
Chicago House Wrecking Co., Chicago, Ill.

Machinery and Supplies. (New and Second-
Hand Bargains.)
Cleveland Belting & Machinery Co., Cleveland, O.

Machinery and Supplies. (New and Second-
Hand Bargains.)
Donner Railway Equipment Co., Chicago, Ill.

Machinery and Supplies. (New and Second-
Hand Bargains.)
Dunsmuir & Son, New York, N. Y.

Machinery and Supplies. (New and Second-
Hand Bargains.)
Elliott & Son, Henry A., Philadelphia, Pa.

Machinery and Supplies. (New and Second-
Hand Bargains.)
Ely & Co., Pittsburgh, Pa.

Machine Tools.

Greaves, Klossman & Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., New York, N. Y.
Stephens Super Co., John, Cincinnati, O.

Machinists. (Engineers.)

American Mch. & Mfg. Co., Charlotte, N. C.
Roanoke Iron Works, Inc., Roanoke, Va.
Stratton & Bragg Co., Petersburg, Va.
Universal Telegraphic Co., Baltimore, Md.

Magnesia Materials.

Johns-Manville Co., H. W., New York, N. Y.

Magnet Electro. (For-Cottonseed, Linters and
Hullers.)
Dixie Electro Magnet Co., Memphis, Tenn.

Magnetic Separators.

Paxson Co., J. W., Philadelphia, Pa.

Mail Chutes.

Cutler Mail Chute Co., Rochester, N. Y.

Mantels. (Wooden.)

Northerness Mantel Co., W. J., Memphis, Tenn.

Marble Work. (Interior.)

Dagostin & Angelial Bros., Montgomery, Ala.

Masonry Dams.

Multiple Arch Hydraulic Const. Co., Ltd., Spar-
tanburg, S. C.

Mechanical Draft.

American Blower Co., Detroit, Mich.

Buffalo Steam Pump Co., Buffalo, N. Y.

Richmond Engr. & Mfg. Co., Richmond, Va.

Sturtevant Co., B. F., Hyde Park, Mass.

Metal Ceilings. [See Ceilings, Metal.]

Metaline.

North Amer. Metaline Co., Long Island City, N.Y.

Metal Culverts. [See Culverts.] (Corrugated
Metal.)

Metal Polish.

Hoffman, Geo. W., Indianapolis, Ind.

Metal Shingles.

Burris & Co., John T., Anderson, S. C.

Chattanooga Rfg. & Fdry. Co., Chattanooga, Tenn.

Cincinnati Sheet Metal & Rfg. Co., Cincinnati, O.

Cortright Metal Roofing Co., Philadelphia, Pa.

Edwards Manufacturing Co., Cincinnati, O.

Hyndman Roofing Co., Cincinnati, O.

Metal Stamping.

Parsons Specialty & Mch. Co., Philadelphia, Pa.

Metal Window Frames and Sashes.
Detroit Steel Products Co., Detroit, Mich.

Edwards Mfg. Co., The, Cincinnati, O.

Keighley Met. Cbl. Mfg. Co., S. Pittsburgh, Pa.

Voigtmann & Co., Chicago, Ill.

Metal Work. (Stamped and Embossed Hotel
Cheeks, Key Tags, etc.)
American Railway Supply Co., New York, N. Y.

Metal-Working Machinery.
Bertrich & Co., Cambridge City, Ind.

Bills Co., E. W., Brooklyn, N. Y.

Leffler & Co., Chas., Brooklyn, N. Y.

Long & Alstetter Co., Hamilton, O.

Rogersford Fdry. & Mch. Co., Rogersford, Pa.

Stoll Co., D. H., Buffalo, N. Y.

Micrometers, Calipers, etc.
Starrett Co., L. S., Athol, Mass.

Milk Filters. (Liquor, Milk, etc.)
International Filter Co., Chicago, Ill.

Mill Engineers and Architects.
Lockwood, Greene & Co., Boston, Mass.

Sirrine, J. E., Greenville, S. C.

Mill Supplies.

Appomattox Iron Wks. & Sup. Co., Petersburg, Va.

Bailey-Lebby Co., Charleston, S. C.

Cameron & Barkley Co., Charleston, S. C.

Galveston Iron Works, Galveston, Ga.

Lindsay, J. L., Inc., Richmond, Va.

Lombard Iron Works, Augusta, Ga.

Manning, Maxwell & Moore, Inc., New York, N.Y.

Mecklenburg Iron Works, Charlotte, N. C.

Nordyke & Marmon Co., Indianapolis, Ind.

Salem Foundry & Machine Works, Salem, Va.

Smith-Courtney Co., Richmond, Va.

Starr Co., B. F., Baltimore, Md.

Stratton & Bragg Co., Petersburg, Va.

Ward Becke Co., Washington, D. C.

Wolf Co., Chambersburg, Pa.

Mining Machinery. (Gold, Copper, Plate, etc.)
Bartlett & Snow Co., C. O., Cleveland, O.

Jeffrey Mfg. Co., Columbus, O.

McLanahan-Stone Mch. Co., Hollidaysburg, Pa.

Mecklenburg Iron Works, Charlotte, N. C.

Power & Mining Machinery Co., Cudahy, Wis.

Raymond Bros. Impact Pulv. Co., Chicago, Ill.

Mixer Machinery.

Smith Co., T. L., Atlanta, Ga.

Mixing Machinery.

Dunning, W. D., Syracuse, N. Y.

Lynn-Superior Co., The, Cincinnati, O.

Mortar Colors.

Chattanooga Paint Co., Chattanooga, Tenn.

Motor Trucks.

International Motor Co., New York, N. Y.

Mouldings, Casings, etc.
Massee & Felton Lumber Co., Macon, Ga.

Nails and Spikes.
American Steel & Wire Co., Chicago, Ill.

Republic Iron & Steel Co., Youngstown, O.

Youngstown Sheet & Tube Co., Youngstown, O.

Nitre Pots, Eggs.
Pratt Engineering & Mach. Co., Atlanta, Ga.

Nuts. [See Bolts, Nuts, Rivets, etc.]
Universal Nut & Bolt Lock Co., Newport, Ky.

Nut Locks. (Railroad.)
Universal Nut & Bolt Lock Co., Newport, Ky.

Office Furniture.
Ruse & Thompson, Baltimore, Md.

Oils. (Lubricating, etc.)
Albany Lubricating Co., New York, N. Y.

Borne-Scrymgeour Co., New York, N. Y.

Galena Signal Oil Co., Franklin, Pa.

Gulf Refining Co., Pittsburgh, Pa.

Robinson & Son Co., Wm. C., Baltimore, Md.

Texas Co., The, New York, N. Y.

Oil-Burning Appliances.

Petroleum Iron Works Co., Sharon, Pa.

Oil Cans.

Wall Mfg. Supply Co., P., Allegheny, Pa.

Oil Engines. [See Engines (Oil).]

Oil Separators.

Stewart Heater Co., Buffalo, N. Y.

Oil Stones.

Carborundum Co., Niagara Falls, N. Y.

Norton Co., Worcester, Mass.

Oil-Well Machinery.

Keystone Steam Well Mach. Co., Beaver Falls, Pa.

Williams Bros., Ithaca, N. Y.

Ornamental Iron Work.

Belmont Iron Works, Philadelphia, Pa.

Bolles Iron & Wire Works, J. E., Detroit, Mich.

Chattanooga Iron & Wire Wks., Chat'n'go, Tenn.

Cheapsenke Iron Works, Baltimore, Md.

Dow Wire and Iron Works, Louisville, Ky.

Ohio Elevator & Machine Co., The, Columbus, O.

Roanoke Iron Works, Inc., Roanoke, Va.

Schreiber & Sons Co., The, Cincinnati, O.

Snead Architectural Iron Works, Louisville, Ky.

Southern Wire & Iron Mfg. Co., Dallas, Tex.

**Oxy-Acetylene Welding and Cutting Outfit
and Supplies.**
International Oxygen Co., New York, N. Y.

Oxygen.

International Oxygen Co., New York, N. Y.

Packing. (Asbestos, Metallic, Rubber, Leather,
etc.)
Jenkins Bros., New York, N. Y.

Johns-Manville Co., H. W., New York, N. Y.

N. J. Car Spring & Rubber Co., Jersey City, N. J.

Power Specialty Co., New York, N. Y.

Paint. (Bridge.)

Dixon Crucible Co., Jos., Jersey City, N. J.

National Roofing Co., Tonawanda, N. Y.

Wilhelm Co., A., New York, N. Y.

Paint. (Cold Water.)

Wilhelm Co., A., New York, N. Y.

Paint. (Metal Preservative.)

National Roofing Co., Tonawanda, N. Y.

Wilhelm Co., A., New York, N. Y.

Paint. (Roofing, Building, etc.)

Armstrong Mfg. Co., The, Richmond, Va.

Berlin Mills Co., Portland, Maine.

Cameron & Barkley Co., Charleston, S. C.

Chattanooga Paint Co., Chattanooga, Tenn.

Dixon Crucible Co., Jos., Jersey City, N. J.

National Roofing Co., Tonawanda, N. Y.

Standard Paint Co., New York, N. Y.

- Presses.** (Balling, Cottonseed Oil, etc., Hydraulic and Power.)
Boomer & Boschert Press Co., Syracuse, N. Y.
Cardwell Machine Co., Richmond, Va.
Continental Gln Co., Birmingham, Ala.
- Presses.** (Stamping.)
Bliss Co., E. W., Brooklyn, N. Y.
Lefter & Co., Charles, Brooklyn, N. Y.
Stoll Co., D. H., Buffalo, N. Y.
- Preventive for Sap Stain.**
Church & Dwight Co., New York, N. Y.
- Printers.** (Book, Catalog, Job, etc.)
Fleet-McGinley Co., Baltimore, Md.
- Promoters.**
Assets Realization Co., Chicago, Ill.
Electric Bond & Share Co., New York, N. Y.
- Protector Steel.** (Concrete Curb, Steps, etc.)
Steel Protected Concrete Co., Philadelphia, Pa.
- Pulleys.** (Friction Clutch.)
Brown Co., A. & F., New York, N. Y.
Caldwell Co., Inc., W. E., Louisville, Ky.
Caldwell & Son Co., H. W., Chicago, Ill.
Cresson Co., Geo. V., Philadelphia, Pa.
Dodge Manufacturing Co., Mishawaka, Ind.
Dodge Manufacturing Co., Baltimore, Md.
Positive Clutch & Pulley Works, Buffalo, N. Y.
Sinclair-Scott Co., Baltimore, Md.
Wood's Sons Co., T. B., Chambersburg, Pa.
- STEEL SPLIT.**
American Pulley Co., Philadelphia, Pa.
Dodge Manufacturing Co., Mishawaka, Ind.
- WOOD SPLIT.**
Caldwell Co., Inc., W. E., Louisville, Ky.
Caldwell & Son Co., H. W., Chicago, Ill.
Dodge Manufacturing Co., Baltimore, Md.
Lane Mfg. Co., Montpelier, Vt.
Positive Clutch & Pulley Works, Buffalo, N. Y.
Saginaw Mfg. Co., Saginaw, Mich.
Salem Foundry & Machine Works, Salem, Va.
- Pulleys, Shafting and Hangers.**
Caldwell Co., Inc., W. E., Louisville, Ky.
Caldwell & Son Co., H. W., Chicago, Ill.
Cresson Co., Geo. V., Philadelphia, Pa.
Dodge Manufacturing Co., Mishawaka, Ind.
Golden's Foundry & Machine Co., Columbus, Ga.
Jeffrey Mfg. Co., Columbus, O.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Lane Mfg. Co., Montpelier, Vt.
Link-Belt Co., Nictown (Philadelphia), Pa.
Nortyke & Marmon Co., Indianapolis, Ind.
Positive Clutch & Pulley Works, Buffalo, N. Y.
Standard Roller Bearing Co., Philadelphia, Pa.
Wood's Sons Co., T. B., Chambersburg, Pa.
- Pumps.** (Centrifugal.)
Alberger Pump Co., New York, N. Y.
Buffalo Steam Pump Co., Buffalo, N. Y.
De Laval Steam Turbine Co., Trenton, N. J.
Erie Pump & Engine Works, Erie, Pa.
Goulds Mfg. Co., Seneca Falls, N. Y.
Haydon Pump Co., Quincy, Ill.
Morris Machine Works, Baldwinville, N. Y.
Noro Engine Co., Lansing, Mich.
Wood & Co., R. D., Philadelphia, Pa.
Worthington, H. R., New York, N. Y.
- Pumps.** (Deep Well.)
McGowan Co., John H., Cincinnati, O.
- Pumps.** (Hydraulic.)
Buffalo Steam Pump Co., Buffalo, N. Y.
Cardwell Machine Co., Richmond, Va.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Erie Pump & Engine Works, Erie, Pa.
Goulds Mfg. Co., Seneca Falls, N. Y.
Worthington, H. R., New York, N. Y.
- Pumps.** (Lift and Force.)
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Rand Co., New York, N. Y.
- Pumps.** (Odorous and Excavating.)
Goulds Mfg. Co., Seneca Falls, N. Y.
- Pumps.** (Pneumatic.)
Ingersoll-Rand Co., New York, N. Y.
- Pumps.** (Boiler Feed.)
Alberger Pump Co., New York, N. Y.
Cameron Steam Pump Wks., A. S., New York, N. Y.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
McGowan Co., John H., Cincinnati, O.
Moffatt Machinery Mfg. Co., Charlotte, N. C.
Murray Iron Works Co., Burlington, Ia.
Myers & Bros., F. E., Ashland, O.
Union Steam Pump Co., Battle Creek, Mich.
Worthington, H. R., New York, N. Y.
- Pumps.** (Rotary.)
Goulds Mfg. Co., Seneca Falls, N. Y.
- Pumps.** (Steam.)
Blakeslee Mfg. Co., Du Quoin, Ill.
Buffalo Steam Pump Co., Buffalo, N. Y.
Cameron Steam Pump Wks., A. S., New York, N. Y.
Cameron & Barkley Co., Charleston, S. C.
Cook Well Co., The, St. Louis, Mo.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Gardner Governor Co., Quincy, Ill.
Goulds Mfg. Co., Seneca Falls, N. Y.
Keystone Pump & Well Eng. Co., Beaver Falls, Pa.
McGowan Co., John H., Cincinnati, O.
Murray Iron Works Co., Burlington, Ia.
Price Machinery Co., S. M., Norfolk, Va.
Sydney Pump & Well Co., Richmond, Va.
Union Steam Pump Co., Battle Creek, Mich.
Worthington, H. R., New York, N. Y.
- Pumps.** (Trench.)
Bond Co., Harold L., Boston, Mass.
Goulds Mfg. Co., Seneca Falls, N. Y.
- Pumps.** (Vacuum.)
Alberger Pump Co., New York, N. Y.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Smith Co., T. L., Atlanta, Ga.
Union Steam Pump Co., Battle Creek, Mich.
- Pumps.** (Water-works.)
McGowan Co., John H., Cincinnati, O.
- Pumping Machinery.**
Allis-Chalmers Co., Milwaukee, Wis.
Blakeslee Mfg. Co., Du Quoin, Ill.
Bond Co., Harold L., Boston, Mass.
Cameron Steam Pump Wks., A. S., New York, N. Y.
Cook Well Co., The, St. Louis, Mo.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Deane Steam Pump Co., Holyoke, Mass.
Deming Co., Salem, O.
Erie Pump & Engine Works, Erie, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Goulds Mfg. Co., Seneca Falls, N. Y.
Keystone Pump & Well Eng. Co., Beaver Falls, Pa.
McGowan Co., John H., Cincinnati, O.
Moffatt Machinery Mfg. Co., Charlotte, N. C.
Morris Machine Works, Baldwinville, N. Y.
- Myers & Bros., F. E., Ashland, O.**
Norborn Engineering Co., Philadelphia, Pa.
Sydney Pump & Well Co., Richmond, Va.
Union Steam Pump Co., Battle Creek, Mich.
Wood & Co., R. D., Philadelphia, Pa.
Worthington, H. R., New York, N. Y.
- Punching and Shearing Machinery.**
Bertsch & Co., Cambridge City, Ind.
Bliss Co., E. W., Brooklyn, N. Y.
Long & Webster Co., Hamilton, O.
Roversford Foundry & Mach. Co., Roversford, Pa.
- Pyrites Burners.**
Pratt Engineering & Mach. Co., Atlanta, Ga.
- Quarrying and Stonecutting Machinery.**
Ingersoll-Rand Co., New York, N. Y.
- Railings, Grilles, etc. (Brass.)**
McKenna Bros. Brass Co., Pittsburgh, Pa.
- Railroads.** (Agricultural and Industrial Opportunities.)
[See Industrial, Agricultural and Commercial Opportunities.]
- Railroad Equipment and Supplies.** (New and Second-hand.)
American Frog & Switch Co., Hamilton, O.
American Locomotive Co., New York, N. Y.
American Valve & Meter Co., Cincinnati, O.
Bailey-Leiby Co., The, Charleston, S. C.
Baldwin Equipment & Supply Co., Chicago, Ill.
Benjamin Equip. Co., Harry, St. Louis, Mo.
Birmingham Rail & Loco. Co., Birmingham, Ala.
Boston Iron & Metal Co., Baltimore, Md.
Cincinnati Frog & Switch Co., Cincinnati, O.
Foster Co., L. B., Pittsburgh, Pa.
Georgia Car & Locomotive Co., Atlanta, Ga.
Hoffman & Co., R. C., Baltimore, Md.
Hyman-Michaels Co., Chicago, Ill.
Indiana Steel & Iron Co., Pittsburgh, Pa.
Kilby Frog & Switch Co., Birmingham, Ala.
Maclean, J. H., Suffolk, Va.
Males Co., Cincinnati, O.
Manning, Maxwell & Moore, Inc., New York, N. Y.
Maryland Equipment & Supply Co., Baltimore, Md.
Mathes Iron & Metal Co., G. St. Louis, Mo.
May & Turner Co., Atlanta, Ga.
National Iron & Steel Co., Houston, Tex.
Newhall Eng. Co., Geo. M., Philadelphia, Pa.
Papin Co., R. K., St. Louis, Mo.
Pickett Co., Inc., H. W., Philadelphia, Pa.
Q & C Co., New York, N. Y.
Reed Co., L. B., Philadelphia, Pa.
Robinson & Orr, Pittsburgh, Pa.
Sherwood, E. C., New York, N. Y.
Smith-Courtney Co., Richmond, Va.
Southern Iron & Equipment Co., Atlanta, Ga.
United States Rail Co., Norfolk, Va.
Steel Rail Supply Co., New York, N. Y.
United States Rail Co., Cumberland, Md.
Vulcan Iron Works, Wilkes-Barre, Pa.
Weir Frog Co., Cincinnati, O.
West Virginia Rail Co., The, Huntington, W. Va.
Wilson & Co., E. H., Philadelphia, Pa.
Zelicker Supply Co., Walter A., St. Louis, Mo.
- Railroad Frogs and Switches.**
American Frog & Switch Co., Hamilton, O.
Cincinnati Frog & Switch Co., Cincinnati, O.
Kilby Frog & Switch Co., Birmingham, Ala.
Mathes Iron & Metal Co., G. St. Louis, Mo.
May & Turner Co., Atlanta, Ga.
Robinson & Orr, Pittsburgh, Pa.
Sweet's Steel Co., Williamsport, Pa.
Weir Frog Co., Cincinnati, O.
- Railroad Tie.** (Reinforced Concrete.)
Universal Concrete Tie Co., New Orleans, La.
- Rails.** (Steel.)
Baldwin Equipment & Supply Co., Chicago, Ill.
Carnegie Steel Co., Pittsburgh, Pa.
Foster Co., L. B., Pittsburgh, Pa.
Franks, J. E., Atlanta, Ga.
Hoffman & Co., R. C., Baltimore, Md.
Hyde Bros. & Co., Pittsburgh, Pa.
Hyman-Michaels Co., Chicago, Ill.
Indiana Steel & Iron Co., Pittsburgh, Pa.
Lewis & Co., Henry, Philadelphia, Pa.
Maclean, J. H., Suffolk, Va.
Mathes Iron & Metal Co., G. St. Louis, Mo.
May & Turner Co., Atlanta, Ga.
National Iron & Steel Co., Houston, Tex.
Newhall Eng. Co., Geo. M., Philadelphia, Pa.
Ohio Iron & Metal Co., Chicago, Ill.
Papin Co., R. K., St. Louis, Mo.
Republie Iron & Steel Co., Youngstown, O.
Robinson & Orr, Pittsburgh, Pa.
Sherwood, E. C., New York, N. Y.
Southern Iron & Equipment Co., Atlanta, Ga.
Steel Rail Supply Co., The, New York, N. Y.
Sweet's Steel Co., Williamsport, Pa.
Tennessee Coal, Iron & R. R. Co., B'm'gh'm, Ala.
United States Rail Co., Cumberland, Md.
West Virginia Rail Co., The, Huntington, W. Va.
Wilson & Co., E. H., Philadelphia, Pa.
Zelicker Supply Co., Walter A., St. Louis, Mo.
- Rail Braces, Crossings, etc.** [See R. R. Frogs and Switches.]
- Rail Joints.**
Q & C Co., New York, N. Y.
- Railways.** (Industrial.)
Chase, Fdry. & Mfg. Co., Columbus, O.
Hunt Co., C. W., West New Brighton, N. Y.
Link-Belt Co., Nictown (Philadelphia), Pa.
- Rams.** (Hydraulic.) [See Hydraulic Rams.]
- Reamers.**
Morse Twist Drill & Mach. Co., New Bedford, Mass.
- Reflectors.**
Holophane Co., Newark, Ohio.
- Reinforcing Bars.**
Carnegie Steel Co., Pittsburgh, Pa.
Concrete-Steel Co., New York, N. Y.
Concrete Steel Engineering Co., New York, N. Y.
Franklin Steel Co., Franklin, Pa.
- Repairing.** (Power Plants.)
Strickland Mch. Co., Richmond, Va.
- Riveters.** (Pneumatic.)
Chicago Pneumatic Tool Co., Chicago, Ill.
Independent Pneumatic Tool Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.
- Road Machinery.**
Austin-Western Co., Ltd., The, Chicago, Ill.
Buffalo Steam Roller Co., Buffalo, N. Y.
Case Threshing Mch. Co., Inc., J. I., Racine, Wis.
Farquhar Co., Ltd., A. B., York, Pa.
Gallon Iron Works Co., Gallon, O.
Iroquois Iron Works, Buffalo, N. Y.
Kelly Springfield Road Roller Co., Springfield, O.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Universal Road Mch. Co., Kingston, N. Y.
Western Wheeled Scraper Co., Aurora, Ill.
- Roadmaking Materials.**
Standard Oil Co., Inc., Newark, N. J.
Texas Co., The, New York, N. Y.
- Road Roller.** (Steam.)
Austin-Western Co., Ltd., The, Chicago, Ill.
Buffalo Steam Roller Co., Buffalo, N. Y.
Case Threshing Mch. Co., Inc., J. I., Racine, Wis.
Iroquois Iron Works, Buffalo, N. Y.
Kelly Springfield Road Roller Co., Springfield, O.
Universal Road Mch. Co., Kingston, N. Y.
- Road Oil.**
Gulf Refining Co., Pittsburgh, Pa.
Prime White Road Oil Co., Cincinnati, O.
Standard Oil Co., Inc., Newark, N. J.
Texas Co., The, New York, N. Y.
- Road Plows.**
Case Threshing Mch. Co., Inc., J. I., Racine, Wis.
Syracuse Chilled Plow Co., Syracuse, N. Y.
- Road Preservatives.**
Gulf Refining Co., Pittsburgh, Pa.
Standard Oil Co., Inc., Newark, N. J.
Texas Co., The, New York, N. Y.
- Rock Crushers.** [See Crushers, Rock.]
- Roll Grinding and Corrugating.** (Flour Mills.)
Venatch & Co., L. R., Louisville, Ky.
- Rolls.** (Bending and Straightening.)
Bertsch & Co., Cambridge City, Ind.
- Roofers' and Tinner's Supplies.**
Merchant & Evans Co., Philadelphia, Pa.
- Roofing.** (Contractors for Laying.)
Dinlaco & Bro., A., Pittsburgh, Pa.
- Roofing.** (Felt, Tar, Asbestos, Asphalt, Tin, etc.)
Allen, Herbert F. L., Washington, D. C.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Armstrong Mfg. Co., Richmond, Va.
Asphalt Ready Roofing Co., New York, N. Y.
Barber Asphalt Paving Co., Philadelphia, Pa.
Barrett Mfg. Co., Philadelphia, Pa.
Cameron & Barkley Co., Charleston, S. C.
Cincinnati Sheet Metal & Rfg. Co., Cincinnati, O.
Johns-Manville Co., H. W., New York, N. Y.
National Roofing Co., Tonawanda, N. Y.
Standard Paint Co., New York, N. Y.
Standard Roofing Co., Tulsa, Okla.
- Roofing.** (Metal Shingles.) [See Shingles, Metal.]
Cincinnati Sheet Metal & Rfg. Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Edwards Mfg. Co., The, Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Roofing.** (Slate.)
East Bangor Consol. Slate Co., East Bangor, Pa.
Genuine Bangor Slate Co., Easton, Pa.
Hower, J. K., Slattington, Pa.
Johnson, E. J., New York, N. Y.
Reynolds Asphalt Shingle Co., H. M., Grand Rapids, Mich.
- Roofing Tile.**
National Roofing Tile Co., Lima, O.
- Roofing and Siding.** (Metal.)
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Cameron & Barkley Co., Charleston, S. C.
Cincinnati Sheet Metal & Rfg. Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Edwards Mfg. Co., The, Cincinnati, O.
Hyndman Roofing Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
New Orleans Rfg. & Metal Wks., New Orleans, La.
Tennessee Metal Culvert Co., Nashville, Tenn.
Youngstown Sheet & Tube Co., Youngstown, O.
- Rope.**
American Mfg. Co., New York, N. Y.
Broderick & Bascom Rope Co., St. Louis, Mo.
Columbian Rope Co., Auburn, N. Y.
International Cotton Mills Corp., New York, N. Y.
Plymouth Cordage Co., North Plymouth, Mass.
- Rope.** (Transmission and Hoisting.)
American Mfg. Co., New York, N. Y.
American Steel & Wire Co., Chicago, Ill.
Broderick & Bascom Rope Co., St. Louis, Mo.
Caldwell Co., Inc., W. E., Louisville, Ky.
Columbian Rope Co., Auburn, N. Y.
Dodge Manufacturing Co., Mishawaka, Ind.
Hunt Co., C. W., West New Brighton, N. Y.
Plymouth Cordage Co., North Plymouth, Mass.
Wood's Sons Co., T. B., Chambersburg, Pa.
- Rope Drives.**
Brown Co., A. & F., New York, N. Y.
Caldwell Co., Inc., W. E., Louisville, Ky.
Caldwell & Son, H. W., Chicago, Ill.
Cresson Co., Geo. V., Philadelphia, Pa.
Dodge Manufacturing Co., Mishawaka, Ind.
Jones & Laughlin Steel Co., Philadelphia, Pa.
Wood's Sons Co., T. B., Chambersburg, Pa.
- Rope Machinery.**
Haskell-Dawes Machine Co., Boston, Mass.
- Rubber Goods.**
Eureka Fire Hose Mfg. Co., New York, N. Y.
New Jersey Car Sp'g & Rub. Co., Jersey City, N. J.
- Rules.** (Steel.)
Lufkin Rule Co., Saginaw, Mich.
Starrett Co., L. S., Athol, Mass.
- Safes and Vaults.**
York Safe & Lock Co., York, Pa.
- Safety Appliances.** (For Elevator.)
Roth Elevator Safety Co., Inc., Baltimore, Md.
- Sand.**
Arundel Sand & Gravel Co., Baltimore, Md.
Kirkpatrick Sand & Gravel Co., Birmingham, Ala.
Lathrop & Co., C. P., Richmond, Va.
- Sand Rammers.**
Chicago Pneumatic Tool Co., Chicago, Ill.
- Sap Stain Preventive.**
Church & Dwight Co., New York, N. Y.
- Sash Chain.**
Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.
- Saws.**
Gerlack Co., Peter, Cleveland, O.
Hether Iron Co., Mfg. Co., Rochester, N. Y.
Smith Machine Co., H. B., Smithville, N. J.
Sydney Pump & Well Co., Richmond, Va.
- Saws.** (Band.)
Smith Machine Co., H. B., Smithville, N. J.
- Saws.** (Hack.)
Starrett Co., L. S., Athol, Mass.
- Sawmill Dogs.**
Soule Steam Feed Works, Meridian, Miss.
- Sawmills.**
Appomattox Iron Wks. & Sup. Co., Petersburg, Va.
Gainesville Iron Works, Gainesville, Ga.
Gibbs Machinery Co., Columbus, S. C.
- Sawmill Machinery.**
Bailey-Leiby Co., Charleston, S. C.
Cameron & Barkley Co., Charleston, S. C.
Chase Turbine Mfg. Co., Orange, Mass.
Lane Mfg. Co., Montpelier, Vt.
Mecklenburg Iron Works, Charlotte, N. C.
Price Mch. Co., S. M., Norfolk, Va.
Schnefeld's Sons Co., J. S., Macon, Ga.
Southern Engine & Roller Works, Jackson, Tenn.
Sydney Pump & Well Co., Richmond, Va.
Union Iron Works Co., Selma, Ala.
- Saw Sharpeners.**
Abrasive Material Co., Philadelphia, Pa.
Carborundum Co., Niagara Falls, N. Y.
Norton Co., Worcester, Mass.
Vitrified Wheel Co., Westfield, Mass.
- Saw Sharpeners and Files.** (Cotton Gln.)
Carver Cotton Gln Co., East Bridgewater, Mass.
- Scales.**
Horse Scale Co., New York, N. Y.
Rome Scale & Mfg. Co., Rome, Ga.
Standard Scale & Supply Co., Pittsburgh, Pa.
- Screening Apparatus.**
Walker & Elliott, Wilmington, Del.
- Screens.** (Fly, Window and Door.)
Cincinnati Mfg. Co., Cincinnati, O.
New Jersey Wire Cloth Co., Trenton, N. J.
- Screens.** (Mining.)
Cresson Co., Geo. V., Philadelphia, Pa.
Cross Engineering Co., Carbondale, Pa.
Erdle Perforating Co., Rochester, N. Y.
Hendrick Mfg. Co., Carbondale, Pa.
Jeffrey Mfg. Co., Columbus, O.
Mundt & Sons, Charles, Jersey City, N. J.
McLanahan Stone Mach. Co., Hollidaysburg, Pa.
New Jersey Wire Cloth Co., Trenton, N. J.
- Searchlights.**
Ft. Wayne Electric Works, Ft. Wayne, Ind.
- Separators.** (Dust.)
Buffalo Forge Co., Buffalo, N. Y.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
- Sewer Pipe Machinery.**
Taplin-Rice Clerkin Co., Akron, O.
- Sewer Pipe.** (Vitrified.)
Bliss Sewer Pipe Co., Macon, Ga.
Cannelton Sewer Pipe Co., Cannelton, Ind.
Hopkins-Buffalo Co., Pittsburgh, Pa.
Pomona Terra-Cotta Co., Pomona, N. C.
Stevens Sons Co., H., Macon, Ga.
- Shades.**
Holophane Co., Newark, Ohio.
- Shafting.** (Polished Steel.)
Field & Co., Inc., Philadelphia, Pa.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Republie Iron & Steel Co., Youngstown, O.
- Shafting.** (See Pulleys, Shafting and Hangers.)
- Shapers.**
Steptoe Shaper Co., John, Cincinnati, O.
- Sharpening Stones.**
Norton Co., Worcester, Mass.
Vitrified Wheel Co., Westfield, Mass.
- Shears.** (Metal.)
Bertsch & Co., Cambridge City, Ind.
Roversford Fdry. & Mach. Co., Roversford, Pa.
Stoll Co., D. H., Buffalo, N. Y.
- Sheet Brass and Copper.**
Hussey & Co., C. G., Pittsburgh, Pa.
Merchant & Evans Co., Philadelphia, Pa.
- Sheet Metal Working Machinery.**
Bertsch & Co., Cambridge City, Ind.
Bliss Co., E. W., Brooklyn, N. Y.
- Sheet Steel and Iron.**
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Cincinnati Iron & Steel Co., Cincinnati, O.
Le Belle Iron Works, Steubenville, O.
Republie Iron & Steel Co., Youngstown, O.
Tennessee Coal, Iron & R. R. Co., B'm'gh'm, Ala.
Wood Iron & Steel Co., Alan, Philadelphia, Pa.
Youngstown Sheet & Tube Co., The, Youngstown, O.
- Shingles.** (Asphalt Slate.)
Reynolds Asphalt Shingle Co., H. M., Grand Rapids, Mich.
- Shingles.** (Metal.)
Burris & Co., John T., Anderson, S. C.
Chattanooga Rfg. & Fdy. Co., Chattanooga, Tenn.
Cincinnati Sheet Metal & Rfg. Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Edwards Mfg. Co., Cincinnati, O.
Hyndman Roofing Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Shredders.** (Bark, Chip, etc.)
Williams Pat. Crush. & Pul. Co., The, Chicago, Ill.
- Shutters.** (Iron.)
Bolles Iron & Wire Works, J. E., Detroit, Mich.
Cheapeake Iron Works, Baltimore, Md.
- Shutters.** (Steel Rolling.)
Kinneer Mfg. Co., Columbus, O.
- Shutters.** (Tin Clad.)
Victor Mfg. Co., Newburyport, Mass.
- Signs.** (Metal Lithographed.)
Southern Can Co., Baltimore, Md.
- Signs.** (Road, Street, Outdoor, Advt.)
Indestructible Sign Co., Columbus, O.
- Skylights and Cornices.**
Milwaukee Corrugating Co., Milwaukee, Wis.
New Orleans Rfg. & Metal Wks., New Orleans, La.
- Slate Roofing.** [See Roofing (Slate).]
- Slate.** (Structural, Sanitary, etc.)
East Bangor Consol. Slate Co., East Bangor, Pa.
Genuine Bangor Slate Co., Easton, Pa.
Hower, J. K., Slattington, Pa.
- Sluice Gates and Appliances.**
Coldwell-Wilcox Co., Newburgh, N. Y.
- Smokestacks.** (Iron and Steel.)
Chattanooga Boiler & Tank Co., Chat'n'gs, Tenn.
Keeler Co., E., Williamsport, Pa.
Lombard Iron Works, Augusta, Ga.
Petroleum Iron Works Co., Sharon, Pa.
Roemmel-Dawley Mfg. Co., St. Louis, Mo.
Schnefeld's Sons Co., J. S., Macon, Ga.
Virginia Bridge & Iron Co., Roanoke, Va.
- Smokestacks.** (Steel-Concrete.)
Weber Chimney Co., Chicago, Ill.

- Spikes.** (Railroad.)
Hoffman & Co., R. C., Baltimore, Md.
West Virginia Rail Co., The, Huntington, W. Va.
- Spikes.** (See Nails and Spikes.)
- Springs.** (Machinery, Railway, Spiral.)
American Steel & Wire Co., Chicago, Ill.
Ory Spring Works, New York, N. Y.
Raymond Mfg. Co., Ltd., Corry, Pa.
- Sprinklers.** (Automatic.)
General Fire Extinguisher Co., Providence, R. I.
- Sprinkler Systems.** (Automatic.)
General Fire Extinguisher Co., Providence, R. I.
- Stamp Mills.**
Mecklenburg Iron Works, Charlotte, N. C.
- Stamps.** (Brass, Rubber.)
Baltimore Office Supply Co., Baltimore, Md.
Bennett Rubber Stamp & Seal Co., Atlanta, Ga.
- Standpipes.**
Chattanooga Boiler & Tank Co., Chat'n'ga, Tenn.
Hartley Boiler Works, Montgomery, Ala.
Keeler Co., E., Williamsport, Pa.
Petroleum Iron Works Co., Sharon, Pa.
Ruemml-Dawley Mfg. Co., St. Louis, Mo.
- Stapling Machinery.** (Fruit Package Basket, etc.)
Garage Machine Co., St. Joseph, Mich.
- Stationers.** (Envelopes, Letter and Bills Heads, etc.)
Young & Selden Co., Baltimore, Md.
- Steam Feeds.**
Boyle Steam Feed Works, Meridian, Miss.
- Steam Fitters' Supplies.**
Saunders' Sons, D., Yonkers, N. Y.
- Steam Heating.**
Keeler Co., E., Williamsport, Pa.
Peck-Hammond Co., The, Cincinnati, O.
- Steamship Lines.**
Baltimore Steam Packet Co., Baltimore, Md.
Chesapeake Steamship Co., Baltimore, Md.
Merchant & Miners' Trans. Co., Baltimore, Md.
- Steam Separators.**
Hopes Mfg. Co., Springfield, O.
Lindstrom's Mach. Wks., John T., Allentown, Pa.
- Steam Shovel Chains.**
Weimer Chain & Iron Co., Lebanon, Pa.
- Steam Shovels.** (See Excavating Machinery.)
- Steam Specialties.**
Kennedy Valve Mfg. Co., Elmira, N. Y.
Powell Co., Wm., Cincinnati, O.
- Steam Traps.**
American Blower Co., Detroit, Mich.
Jenkins Bros., New York, N. Y.
Lindstrom's Mach. Wks., John T., Allentown, Pa.
- Steel.**
American Rolling Mill Co., Middletown, O.
Dietrich Bros., Baltimore, Md.
Field & Co., Inc., Philadelphia, Pa.
Hoffman & Co., R. C., Baltimore, Md.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
La Belle Iron Works, Steubenville, O.
Oliver Iron & Steel Co., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Wood Iron & Steel Co., Alan, Philadelphia, Pa.
- Steel (Tool).**
Field & Co., Inc., Philadelphia, Pa.
Jencks & Sons, Inc., Wm., St. Louis, Mo.
- Steel (Vanadium).**
Carnegie Steel Co., Pittsburgh, Pa.
- Steel Buildings.** (Designers, Builders.)
Amer. Bridge Co. of New York, New York, N. Y.
Champion Bridge Co., Wilmington, Ohio.
Chesapeake Iron Works, Baltimore, Md.
Furns Bridge Co., Pittsburgh, Pa.
Phoenix Iron Co., Philadelphia, Pa.
Roanoke Bridge Co., Roanoke, Va.
Schreiber & Sons Co., The L., Cincinnati, O.
Snead Architectural Iron Works, Louisville, Ky.
Virginia Bridge & Iron Co., Roanoke, Va.
- Steel Casting.**
Crucible Steel Castings Co., Lanadowne, Pa.
Hoffman & Co., R. C., Baltimore, Md.
Bellance Steel Casting Co., Pittsburgh, Pa.
- Steel Plate Work.**
Casey-Hedges Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Chat'n'ga, Tenn.
Hoffman & Co., R. C., Baltimore, Md.
Phoenix Iron Co., Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Ruemml-Dawley Mfg. Co., Richmond, Mo.
Ruemml-Dawley Mfg. Co., St. Louis, Mo.
- Steel Protector.** (Concrete Curb Steps, etc.)
[See Protector Steel.]
- Steel Sheet Piling.**
Jones & Laughlin Steel Co., Pittsburgh, Pa.
- Stencils.**
Baltimore Office Supply Co., Baltimore, Md.
- Stirrups.** (Building.)
Chesapeake Iron Works, Baltimore, Md.
- Stock Certificates, Bonds and Seals.**
Baltimore Office Supply Co., Baltimore, Md.
- Stokers.** (Mechanical.)
Babcock & Wilcox Co., New York, N. Y.
Harrisburg Fdry. & Mach. Wks., Harrisburg, Pa.
Westinghouse Machine Co., Pittsburgh, Pa.
- Storage Batteries.**
Bilson Storage Battery Co., Orange, N. J.
Eco Storage Battery Co., Tus, Philadelphia, Pa.
Eco Electric Co., Baltimore, Md.
Westinghouse Machine Co., Pittsburgh, Pa.
- Strainers.**
Cameron Steam Pump Wks., A. S., New York, N. Y.
- Structural Steel and Iron.**
Amer. Bridge Co. of New York, New York, N. Y.
Belmont Iron Works, Philadelphia, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Champion Bridge Co., Wilmington, Ohio.
Chesapeake Iron Works, Baltimore, Md.
Cincinnati Iron & Steel Co., Cincinnati, O.
Des Moines Bridge & Iron Co., Des Moines, Ia.
Dietrich Bros., Baltimore, Md.
- Hoffman & Co., R. C., Baltimore, Md.**
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Memphis Bridge Co., Memphis, Tenn.
Phoenix Iron Co., Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Roanoke Bridge Co., Roanoke, Va.
Roanoke Iron Works, Inc., Roanoke, Va.
Schreiber & Sons Co., The L., Cincinnati, O.
Snead Architectural Iron Works, Louisville, Ky.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Virginia Bridge & Iron Co., Roanoke, Va.
York Bridge Co., York, Pa.
- Stump Pullers.**
Zimmerman Steel Co., M. R., Lone Tree, Ia.
- Sugar-Mill Machinery.**
Pratt Engineering & Mach. Co., Atlanta, Ga.
- Sulphur.**
Union Sulphur Co., New York, N. Y.
- Super-Heaters.** (Steam.)
Babcock & Wilcox Co., New York, N. Y.
Power Specialty Co., New York, N. Y.
- Surveying Instruments.**
Keuffel & Esser, Hoboken, N. J.
Weber & Co., F., Philadelphia, Pa.
- Switchboards, Switches, etc.**
Engberg's Elect. & Mech. Wks., St. Joseph, Mich.
Fort Wayne Electric Works, Fort Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Westinghouse Elect. & Mfg. Co., Pittsburgh, Pa.
- Switches.** (See Railroad Frogs and Switches.)
- Switchstands.**
American Valve & Meter Co., Cincinnati, O.
Weir Frog Co., Cincinnati, O.
- Tackle Blocks.** (For Wire or Manila Rope.)
Patterson Co., W. W., Pittsburgh, Pa.
- Tanks.** (Iron and Steel.)
American Water Softener Co., Philadelphia, Pa.
Caldwell Co., Inc., W. E., Louisville, Ky.
Case Threshing Mach. Co., Inc., J. I., Racine, Wis.
Casey-Hedges Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Chat'n'ga, Tenn.
Cole Mfg. Co., E. D., Newnan, Ga.
Des Moines Bridge & Iron Co., Des Moines, Ia.
Gem City Boiler Co., Dayton, O.
Harry Bros. Co., Newport, Ky.
Hartley Boiler Works, Montgomery, Ala.
Keeler Co., E., Williamsport, Pa.
Lombard Iron Works, Augusta, Ga.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
New Orleans Rfg. & Met. Wks., New Orleans, La.
Oil City Boiler Co., Oil City, Pa.
Petroleum Iron Works Co., Sharon, Pa.
Ruemml-Dawley Mfg. Co., St. Louis, Mo.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.
Schofield's Sons Co., J. S., Macon, Ga.
Sydney Pump & Well Co., Richmond, Va.
Tennessee Metal Culvert Co., Nashville, Tenn.
Virginia Bridge & Iron Co., Roanoke, Va.
Walsh & Weidner Boiler Co., Chattanooga, Tenn.
- Tanks.** (Wood.)
Baltimore Cooperage Co., Baltimore, Md.
Caldwell Co., Inc., W. E., Louisville, Ky.
Davis & Son, G. M., Palatka, Fla.
Sydney Pump & Well Co., Richmond, Va.
- Tapes.** (Measuring.)
Keuffel & Esser, Hoboken, N. J.
Lufkin Rule Co., Saginaw, Mich.
Starrett Co., L. S., Athol, Mass.
- Telephones.** (Supplies, Equipment.)
Piedmont Electric Co., Asheville, N. C.
Western Electric Co., New York, N. Y.
- Telephone Cable.**
Western Electric Co., New York, N. Y.
- Telephone Poles.** [See Crossies.]
Intern'l Crod. & Constr. Co., Galveston, Tex.
Western Electric Co., New York, N. Y.
- Terracotta.**
Atlanta Terra-Cotta Co., Atlanta, Ga.
Bibb Sewer Pipe Co., Macon, Ga.
Maryland Terra-Cotta Co., Baltimore, Md.
Pomona Terra-Cotta Co., Pomona, N. C.
Southern Building Material Co., Norfolk, Va.
Stevens' Sons Co., H., Macon, Ga.
- Threshers.**
Cardwell Machine Co., Richmond, Va.
Case Threshing Mach. Co., Inc., J. I., Racine, Wis.
- Tie Plates.** (Railways.)
Virginia Railway Supply Co., Norfolk, Va.
- Tile.** (Drain, Floor, etc.)
Amer. Enam. Brick & Tile Co., New York, N. Y.
Bibb Sewer Pipe Co., Macon, Ga.
Oconee Brick & Tile Co., Milledgeville, Ga.
- Tile.** (Mosaic.)
Dagostin & Angelini Bros., Montgomery, Ala.
- Tile.** (Roofing.)
National Roofing Tile Co., Lima, O.
- Tin and Terne Plates.**
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Merchant & Evans Co., Philadelphia, Pa.
- Tobacco Machinery.**
Buckeye Iron & Brass Works, Dayton, O.
Cardwell Machine Co., Richmond, Va.
- Tool Steels.**
Jencks & Sons, Inc., Wm., St. Louis, Mo.
- Tools.** (Machinists'.)
Manning, Maxwell & Moore, Inc., New York, N. Y.
Morse Twist Drill & Mach. Co., New Bedford, Mass.
- Tools.** (Mechanical.)
Starrett Co., L. S., Athol, Mass.
- Tools.** (Pneumatic.)
Amer. Compressor & Pump Co., Baltimore, Md.
Chicago Pneumatic Tool Co., Chicago, Ill.
Independent Pneumatic Tool Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.
- Torches.**
Wall Mfg. Supply Co., P., Allegheny, Pa.
- Towers.** (Steel and Wood.)
Baltimore Cooperage Co., Baltimore, Md.
Caldwell & Co., Inc., W. E., Louisville, Ky.
Chattanooga Boiler & Tank Co., Chat'n'ga, Tenn.
Cole Mfg. Co., E. D., Newnan, Ga.
Des Moines Bridge & Iron Co., Des Moines, Ia.
- Traction Engines.**
Case Threshing Mach. Co., Inc., J. I., Racine, Wis.
International Harvester Co. of America, Chicago, Ill.
Quincy Engine Co., Quincy, Pa.
- Tramway.** (Overhead.)
Northern Engineering Works, Detroit, Mich.
Speldel, J. G., Reading, Pa.
- Tramway.** (Wire Rope.)
Broderick & Bascom Rope Co., St. Louis, Mo.
Caldwell & Sons Co., H. W., Chicago, Ill.
Link-Belt Co., Nicetown (Philadelphia), Pa.
- Transformers.**
Crocker-Wheeler Co., Ampere, N. J.
Moloney Electric Co., St. Louis, Mo.
Triumph Electric Co., Cincinnati, O.
- Transmission Line Supplies.** (Electric.)
Electrical Engineers' Equip. Co., Chicago, Ill.
- Trench Excavator.**
Fairbanks Steam Shovel Co., Marion, O.
Monaghan Machine Co., Chicago, Ill.
- Trucks.** (Motor.)
International Motor Co., New York, N. Y.
- Trucks.** (Platform, Freight, Mill, Factory, etc.)
Chase Fdry. & Mfg. Co., Columbus, O.
Howe Scale Co., New York, N. Y.
Rome Scale & Mfg. Co., Rome, Ga.
- Trucks.** (Storage Battery Auto.)
Westinghouse Machine Co., Pittsburgh, Pa.
- Trucks.** (Wood and Steel for Portable Machinery.)
Empire Manufacturing Co., Quincy, Ill.
- Trust Companies.** [See Bankers and Brokers.]
- Tube Well Strainers.**
Cook Well Co., St. Louis, Mo.
- Tubes.** (Boiler.)
Cincinnati Iron & Steel Co., Cincinnati, O.
National Tube Co., Pittsburgh, Pa.
- Tubing.**
Field & Co., Inc., Philadelphia, Pa.
La Belle Iron Works, Steubenville, O.
National Tube Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.
- Turbines.** (Hydraulic.)
Allis-Chalmers Co., Milwaukee, Wis.
Davis Foundry & Machine Works, Rome, Ga.
Leffel & Co., James, Springfield, O.
Poole Engineering & Mach. Co., Baltimore, Md.
Smith Co., S. Morgan, York, Pa.
- Turbines.** (Steam.)
Allis-Chalmers Co., Milwaukee, Wis.
De Laval Steam Turbine Co., Trenton, N. J.
F. E. Wayne Electric Works, Ft. Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Southwark Fdry. & Mach. Co., Philadelphia, Pa.
Terry Steam Turbine Co., New York, N. Y.
Western Electric Co., New York, N. Y.
Westinghouse Machine Co., Pittsburgh, Pa.
- Turntables.**
Virginia Bridge & Iron Co., Roanoke, Va.
- Tuyeres.** (Copper and Bronze.)
Keystone Bronze Co., Pittsburgh, Pa.
- Twine.**
American Manufacturing Co., New York, N. Y.
Columbian Rope Co., Auburn, N. Y.
International Cotton Mills Corp., New York, N. Y.
Plymouth Cordage Co., North Plymouth, Mass.
- Twine Machinery.**
Haskell-Dawes Machine Co., Boston, Mass.
- Twisting Machinery.**
Haskell-Dawes Machine Co., Boston, Mass.
- Unions.**
Dart Manufacturing Co., E. M., Providence, R. I.
- Vacuum Cleaning Apparatus.**
Blaisdell Machinery Co., Bradford, Pa.
- Valves.**
Bourbon Copper & Brass Wks. Co., Cincinnati, O.
Columbian Iron Works, Chattanooga, Tenn.
Frick Co., The, Waynesboro, Pa.
Glamorgan Pipe & Foundry Co., Lynchburg, Va.
Jenkins Bros., New York, N. Y.
Kennedy Valve Mfg. Co., Elmira, N. Y.
National Tube Co., Pittsburgh, Pa.
Powell Co., Wm., Cincinnati, O.
York Mfg. Co., York, Pa.
- Varnish.**
Berry Bros., Ltd., Detroit, Mich.
- Vener Machines.**
Titus, E. E., Petersburg, Va.
- Ventilating Apparatus.** (Engineers' and Contractors.)
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Peck-Hammond Co., Cincinnati, O.
Sturtevant Co., E. F., Hyde Park, Mass.
- Ventilators.**
Merchant & Evans Co., Philadelphia, Pa.
Pullman Auto. Ventilator Mfg. Co., York, Pa.
- Wagons.** (Dump.)
Columbia Wagon Co., Columbia, Pa.
Eagle Wagon Works, Auburn, N. Y.
Troy Wagon Works Co., Troy, O.
Western Wheeled Scraper Co., Aurora, Ill.
- Wagons.** (Ice, Bakers' and Laundry.)
Koenig & Lubra Wagon Co., Quincy, Ill.
- Wall Plaster.**
King & Co., J. B., New York, N. Y.
- Wall Plugs.** (Galvanized.)
Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.
Wicks Mfg. Co., Milton, O., Glen Cove, N. Y.
- Wall Ties.**
Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.
Page Woven Wire Fence Co., Adrian, Mich.
- Washers.** (Ore and Phosphate.)
Bailey-Lebby Co., Charleston, S. C.
Cameron & Barker Co., Charleston, S. C.
McLanahan-Stone Mach. Co., Hollidaysburg, Pa.
- Washers.** (Water-Power for Clothes.)
Bates & Bros. Co., D. L., Dayton, O.
- Washers and Rivets.** [See Bolts, Nuts, Rivets, Studs and Washers.]
- Water Filters.** [See Filters, Water, for Domestic and Industrial Purposes.]
- Water Meters.**
American Valve & Meter Co., Cincinnati, O.
- Waterproofing.** (For Brick Work.)
Barrett Mfg. Co., Philadelphia, Pa.
Ceresit Waterproofing Co., Chicago, Ill.
National Roofing Co., Tonawanda, N. Y.
- Waterproofing.** (For Cement Mortar.)
Ceresit Waterproofing Co., Chicago, Ill.
- Waterproofing.** (For Concrete.)
Barrett Mfg. Co., Philadelphia, Pa.
Ceresit Waterproofing Co., Chicago, Ill.
National Roofing Co., Tonawanda, N. Y.
- Waterproof Compound.** (Liquid.)
National Roofing Co., Tonawanda, N. Y.
- Water-Softening Apparatus.** (Purifying.)
American Water Softener Co., Philadelphia, Pa.
Dodge Manufacturing Co., Mishawaka, Ind.
Gem City Boiler Co., Dayton, O.
N. Y. Cont. Jewell Filt'n Co., New York, N. Y.
Roberts Filter Mfg. Co., Philadelphia, Pa.
Scaife & Sons Co., Wm. B., Pittsburgh, Pa.
Tucker & Laxton, Charlotte, N. C.
- Water Supply Systems.** (Town, Home, Railroad, etc.)
Rife Engine Co., New York, N. Y.
- Water-Wheels.** [See Turbines. (Hydraulic).]
- Water-Works Supplies and Appliances.**
American Cast Iron Pipe Co., Birmingham, Ala.
American Pipe & Constr. Co., Philadelphia, Pa.
Buller Pipe Co., Macon, Ga.
Bourbon Copper & Brass Wks. Co., Cincinnati, O.
Caldwell-Wilcox Co., Newburgh, N. Y.
Columbian Iron Works, Chattanooga, Tenn.
Glamorgan Pipe & Foundry Co., Lynchburg, Va.
Kennedy Valve Mfg. Co., Elmira, N. Y.
Keystone Pump & Well Eng. Co., Beaver Falls, Pa.
Leadite Co., Inc., The, Philadelphia, Pa.
McWane Pipe Works, Lynchburg, Va.
Pomona Terra-Cotta Co., Pomona, N. C.
Stevens' Sons Co., H., Macon, Ga.
U. S. Cast Iron Pipe & Fdry. Co., New York, N. Y.
- Weather Strips.**
Pullman Auto. Ventilator Mfg. Co., York, Pa.
- Weigher.** (Recording Liquid.)
Worthington, Henry R., New York, N. Y.
- Well Contractors.** (Oil, Artesian, etc.)
Cook Well Co., The, St. Louis, Mo.
Hughes Specialty Well Drill Co., Charleston, S. C.
Stothoff Bros., Flemington, N. J.
Sydney Pump & Well Co., Richmond, Va.
- Well Tools and Supplies.**
Cook Well Co., The, St. Louis, Mo.
Keystone Pump & Well Eng. Co., Beaver Falls, Pa.
Williams Bros., Ithaca, N. Y.
- Wheels and Axles.**
Empire Manufacturing Co., Quincy, Ill.
Oliver Mfg. Co., W. J., Knoxville, Tenn.
- Wheelbarrows and Trucks.**
Syracuse Chilled Plow Co., Syracuse, N. Y.
- Wheels.** (Steel and Steel Tired.)
Carnegie Steel Co., Pittsburgh, Pa.
Empire Manufacturing Co., Quincy, Ill.
- White Lead and Lined Oil.**
Thompson & Co., Pittsburgh, Pa.
- Window Frames and Sashes.** (Fireproof.)
Detroit Steel Products Co., Detroit, Mich.
Volgtmann & Co., Chicago, Ill.
- Window Guards.** (Wire.) [See Wire Goods.]
- Windmills.**
Baltimore Cooperage Co., Baltimore, Md.
Caldwell Co., Inc., W. E., Louisville, Ky.
- Wire Insulating.**
General Electric Co., Schenectady, N. Y.
- Wire.** (Barbed Wire, etc.)
American Steel & Wire Co., Chicago, Ill.
Roebbling's Sons Co., J. A., Trenton, N. J.
Youngstown Sheet & Tube Co., Youngstown, O.
- Wire Cloth.** (Iron, Steel, Brass, etc.)
American Steel & Wire Co., Chicago, Ill.
Caldwell & Sons Co., The H. W., Chicago, Ill.
Meyers Mfg. Co., Fred J., Hamilton, O.
New Jersey Wire Cloth Co., Trenton, N. J.
- Wire Goods.**
Bolles Iron & Wire Works, J. E., Detroit, Mich.
Cincinnati Mfg. Co., Cincinnati, O.
Dow Wire and Iron Works, Louisville, Ky.
Dufur & Co., Baltimore, Md.
Dufur, Baggett & Co., Baltimore, Md.
Meyers Mfg. Co., The, Fred J., Hamilton, O.
New Jersey Wire Cloth Co., Trenton, N. J.
- Wire Netting.**
American Steel & Wire Co., Chicago, Ill.
New Jersey Wire Cloth Co., Trenton, N. J.
- Wire Rope.**
American Steel & Wire Co., Chicago, Ill.
Broderick & Bascom Rope Co., St. Louis, Mo.
Contractors' Plant Mfg. Co., Inc., Buffalo, N. Y.
Roebbling's Sons Co., J. A., Trenton, N. J.
Williamsport Wire Rope Co., Williamsport, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.
- Wire Rope Clips.**
American Holist & Derrick Co., St. Paul, Minn.
- Wire Rope Thimbles.**
Broderick & Bascom Rope Co., St. Louis, Mo.
- Wood Blocks.** (For Paving and Factory Floors.)
U. S. Wood Preserving Co., New York, N. Y.
- Woodboring Machines.**
Chicago Pneumatic Tool Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.
- Wood-Fiber Plaster.**
King & Co., J. B., New York, N. Y.
- Wood Pipe.** (For Water, etc.)
Wyckoff & Son Co., A., Elmira, N. Y.
- Woodworking Machinery.**
Kline, Lewis T., Alpena, Mich.
Lane Mfg. Co., Montpelier, Vt.
Ober Mfg. Co., Chagrin Falls, O.
Shlimer & Sons, Samuel J., Milton, Pa.
Smith-Courtney Co., Richmond, Va.
Smith Machine Co., H. B., Smithville, N. J.
Wilmington Iron Works, Wilmington, N. C.
- Wrapping Paper.**
Berlin Mills Co., Portland, Maine.
- Yarn.** (Tanned Sial.)
American Manufacturing Co., New York, N. Y.
Columbian Rope Co., Auburn, N. Y.
Plymouth Cordage Co., North Plymouth, Mass.

Ads. marked * appear every other week.
Ads. marked † appear in first issue of the month.
Ads. marked ‡ not in this issue.

Alphabetical Index of Advertisers.

"CLASSIFIED OPPORTUNITIES"
See pages 94, 95 and 96.

Abendroth & Root Mfg. Co., Inc.	121	Carolina Electrical Co., Inc.	8	Gainesville Iron Works	53	La Belle Iron Works	46	Oil City Boiler Works	11	Standard Roofing Co.	11
Abrasive Material Co.	24	Carrier Cotton Gin Co.	130	Galena-Signal Oil Co.	22	Ladew, Estate, Edw. R.	22	Old Dominion Land Co.	92	Standard Scale & Sup. Co.	11
Acme Knitting Machine & Needle Co.	131	Cary Spring Works	23	Gallon Iron Works Co.	18	Laidlaw-Dunn-Gordon Co.	109	Oliver Iron & Steel Co.	54	Starr Co. B. F. Wks.	11
Adder Machine Co., The	12	Case Thresh. Mch. Co., J. L. Inc.	119	Gandy Belting Co.	23	Lane Mfg. Co.	109	Oliver Mfg. Co., The Wm. J.	105	Starrett Co., L. S.	11
Alabama Cons. Coal & Iron Co.	37	Casey-Hedges Co., The	12	Gardner Crusher Co.	12	Lathrop & Co. C. P.	34	Otis Elevator Co.	28	Steel Protected Concrete Co.	11
Albany Lubricating Co.	37	Central of Georgia Railway	133	Gardner Gov. Co.	12	Lawrence, James C.	31	Otto Engine Co.	7	Steel Rail Supply Co.	11
Alberger Condenser Co.	124	Cerest Waterproofing Co.	35	Gardner & Howe	12	Lee, Henry L.	30	Steppe Shaper Co.	11	Steele & Sons, J. C.	11
Alberger Pump Co.	124	Champion Bridge Co.	41	Garrison, M. D. M. L.	98	Leadite Co., Inc., The	120	Stevens' Sons & Co., H.	11	Stewart Heater Co., The	11
Albro-Clem Elevator Co.	26	Chase Foundry & Mfg. Co.	98	Gas & Electric Co.	1	Leate-Maupin Eng. Co.	30	Stewart, St. H.	11	Stone & Webster Engineering Corp.	11
Alger & Smith	13	Chase Turbine Mfg. Co.	52	Gem City Boiler Co.	12	Leffel & Co., James	125	Stothoff Bros.	11	Stratton & Bragg Co.	11
Allen, Herbert F. L.	13	Chaifanoga Boiler & Tank Co.	4	General Electric Co.	8	Leffler & Co., Chas.	122	Strickland Mch. Co.	11	Strickland Mch. Co.	11
Allich-Chalmers Co.	56	Chaifanoga Iron & Wire Wks.	40	Genl. Fire Extinguisher Co.	56	Lehigh Portland Cement Co.	32	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Alpha Portland Cement Co.	32	Chaifanoga Paint Co.	48	Genl. Bangor Slate Co.	48	Lehigh Portland Cement Co.	32	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Aising Engineering Co., J. R.	115	Chaifanoga Roofing & Fdry.	48	Genl. Bureau of Industries	132	Lehigh Portland Cement Co.	32	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Aluminum Co. of America	115	Chas. Belting Co.	23	Georgia Car & Locomotive Co.	14	Leopold, D. M.	98	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Amberson Hydraulic Construction Co.	36	Chas. Belting Co.	23	Gerlach Co., Peter	31	Levine & Co., E.	100	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Air Compress. Wks.	100	Chas. Belting Co.	23	Gibbs Machinery Co.	100	Levy, Deronda	30	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Blower Co.	15	Chicago House Wrecking Co.	100	Gilbert, H. J.	97	Lewis, Fred. H.	30	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Bridge Co. of New York	15	Chicago Pneumatic Tool Co.	109	Gilbert & Sons Brass Fdry. Co.	100	Lide, Martin J.	30	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Cast Iron Pipe Co.	120	Cole Mfg. Co., R. D.	121	Glanmorang Pipe & Fdry. Co.	120	Lidgerwood Mfg. Co.	113	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Compressor & Pump Co.	109	Coleman, D. P.	121	Golden's Foundry & Mach. Co.	20	Lina Locomotive & Mach. Co.	106	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Cotton Oil Co.	109	Cincinnati Iron & Steel Co.	49	Goulds Manufacturing Co.	124	Lindstrom's Machine Works	20	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Amer. Enam. Bk. & Tile Co.	44	Cincinnati Sheet Metal & Roofing Co.	109	Graham, Edgar M.	30	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Engine Co.	110	Cincinnati Sheet Metal & Roofing Co.	109	Granbery, W. H.	30	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Engineering Co.	110	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Frog & Switch Co.	102	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Hoist & Derrick Co.	102	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Locomotive Co.	102	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Machine Co.	29	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Machine & Mfg. Co.	43	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Mfg. Co.	91	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Pipe & Constr. Co.	120	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Process Co.	35	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Pulley Co., The	26	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Pulverizer Co.	114	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Railway Supply Co.	128	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Rolling Mill Co.	147	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Sheet & Tin Plate Co.	45	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Spiral Pipe Works	121	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Steel & Wire Co.	127	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Supply Co. of Providence, R. I.	131	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Valve & Water Co.	122	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
American Water Softener Co.	17	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Angle, Geo. W.	30	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Appomattox Iron Works & Supply Co.	52	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Arncliffe Mfg. Co.	45	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Arnold Co., The	45	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Arundel Sand & Gravel Co.	44	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Ashland Steel Range Mfg. Co.	35	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Asphalt Ready Roofing Co.	98	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Assets Realization Co.	98	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Atlanta, Birmingham & Atlantic Railway	132	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Atlanta Terra Cotta Co.	132	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Atlanta & West Point R. R. Co.	132	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Augusta Lumber Co.	104	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Austin Mfg. Co.	104	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Austin-Western Co. Ltd., The	119	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Babcock & Wilcox Co.	12	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Badger & Sons Co., E. B.	12	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Ball-Libby Co.	104	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baldwin Equip. & Supply Co.	104	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baldwin Locomotive Works	104	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
The	104	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Ball Engine Co.	104	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore & Ohio R. R.	137	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Adit Co.	137	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Belting Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109	Green, F. J.	101	Link-Belt Co.	15	Stuebner Iron Works Co.	11	Stuebner Iron Works Co.	11
Baltimore Coal & Iron Co.	23	Cincinnati Sheet Metal & Roofing Co.	109								

Sh

erated
No ar
solute
The
pletely
Very
Given

So
ca

BOOK

300 V

This Press Shows the Pressure

started at any moment.
No guess work, but an absolute indication.
The press is made completely of iron and steel.
Very strong and sturdy.
Gives tremendous pressure.
Send for illustrated catalogue.

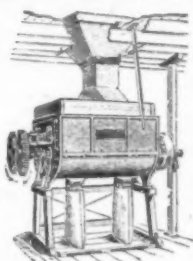


BOOMER & BOSCHERT PRESS CO.
306 W. Water St. SYRACUSE, N. Y.

The Broughton DRY MIXER

FOR
Hard Plaster
Cement
Paint, etc.

W. D. DUNNING
96 W. Water St.
SYRACUSE, N. Y.



"Walls" Everlasting Oilers

Our Specialties

Incense Oil Cans,
Filling Torches, Hand
Lamps, Ice Cans, Bells,
Gears, Belt Fasteners, etc.
These goods are warranted of
the greatest possible durability,
and the best obtainable quality.

Ask for Catalogue.

The P. Wall Mfg. Co.
Allegheny, Pa.

of Brazed Steel, specially designed
for Strength. Every joint brazed
with Hard Spelter. Red Heat
or the roughest usage will
not cause a leak.



"ACCOMPLISHED" TERNE PLATES

made from

American Ingot Iron THE ACME OF DURABILITY

That was considered impossible
has again been accomplished.

After years of experimenting the
light tin plate necessary for tin-
ning and tinning has been made
from

AMERICAN INGOT IRON

Not since the discontinuance of
the manufacture of the Old
Fashioned Iron Terne Plates in
England has a product equal to
AMERICAN INGOT IRON
TERNE PLATE been placed
upon the market.

THE PUREST IRON BASE
under the best method of terne
coating obtainable insures THE
MOST DURABLE TERNE
PLATE ever manufactured—
Reasonable in Price—Unex-
celled in Durability.

Write for prices and a sample now.

Address Publicity Agent,

The American Rolling Mill Co.
MIDDLETOWN, OHIO

Licensed Manufacturers Under The International Metal Products Co.'s Patents

DISTRICT SALES OFFICES

Pittsburgh, 1832 Oliver Bldg.	New York, Battery Park Bldg.
Chicago, 313 Peoples Gas Bldg.	Detroit, 614 Ford Bldg.
Milwaukee, 222 Grand Avenue	Cleveland, 952 Rockefeller Bldg.
St. Louis, 814 New Bank of Commerce Bldg.	

UNION SULPHUR CO.

MAIN OFFICE

Whithall Building NEW YORK, U. S. A.

Own and Operate in Calcasieu Parish,
Louisiana

The Largest Sulphur Mine in the World

Absolutely Free from Arsenic or Selenium

The markets of the world are supplied
through the port of Sabine Pass, Texas,
and the Company has large storage
facilities at Baltimore, Philadelphia,
New York, Boston, Portland and
Three Rivers, Canada, from which
the trade can be supplied in carload
lots, as required.

Producers of the Highest Grade Brimstone
on the Market

Black Diamond File Works

Established 1863

Incorporated 1895

Twelve Medals
Awarded
at International
Expositions.

Special Prize
Gold Medal
Atlanta,
1885.



Our goods are on sale
in every leading hard-
ware store in the
United States and
Canada. Copy of Cata-
logue will be sent free
to any interested file
user on application.

G. & H. BARNETT CO., Philadelphia, Pa.
Owned and Operated by NICHOLSON FILE CO.

DELTA

TRADE MARK

FILES OF QUALITY

DELTA FILE WORKS, PHILADELPHIA, PA.

The highest grade file made.
The file you will eventually use.

INTERNATIONAL COTTON MILLS CORPORATION

86-88 Worth Street, NEW YORK

Standard Cotton Goods and Specialties

OWNER OF

"WOODBERRY"
"ONTARIO"
"MOUNT VERNON"

"ARETAS"
"LAUREL"
"DRUID MILLS"

"GREENWOODS"
"POLHEMUS"
"FRANKLINVILLE"

SAIL, ARMY AND WIDE DUCK

Cotton Duck
Awning Stripes
Agricultural Duck
Automobile Duck
Carriage Duck
Automobile Tire Duck
Roofing Duck

Waterproof Duck
Tarpaulin Duck
Sail Duck
Filling Duck
Stripes and Crashes
Osnaburghs
Buntings

Paper Mill Felts
Brown Sheetings
Shirtings
Drills and Twills
Army Duck
Hose Duck
Belting Duck

Tent Duck
Suit Case Duck
Grain Bags
Cotton Twine
Cotton Yarn
Rope, Wick, &c.

SELLING HOUSE

J. SPENCER TURNER COMPANYNEW YORK
BOSTONBALTIMORE
CHICAGOST. LOUIS
SAN FRANCISCOLONDON, ENG.
MANCHESTER, ENG.

Do the valves you are buying bear
this Trade Mark?
It's the distinctive sign which is
placed on all the genuine

**Jenkins Bros. Valves**

It's to the advantage of valve users to be particular in the wording of their specifications, for only by taking the precaution of demanding the Trade Mark are they assured of always receiving the genuine article.

Jenkins Bros. Valves are made in Standard and Extra Heavy Patterns, in brass or iron, and valves can be furnished suitable for practically any kind of service.

Jenkins Bros. Valves have a well established reputation among experienced steam users, for it has been found by actual service tests that for durability and reliability they are unequalled.

Jenkins Bros., New York, Philadelphia, Boston, Chicago.

**SAVE THE COST**

of frequent repainting by using

DIXON'S SILICA-GRAPHITE PAINT

For protection of metal surfaces.

Write our Paint Department for long service records.

JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J.

H. STEVENS' SONS CO., Macon, Ga.

Manufacturers of

Sewer and R. R. Culvert Pipe

Fire Brick, Milled Clay Flue Pipe and Chimney Tops, Urns, &c.

Correspondence Solicited

**LUFKIN****Measuring Tapes**In Accuracy, Durability and Workmanship
are Unequaled.

"With Instantaneous Readings."

THE LUFKIN RULE CO.

NEW YORK

LONDON, ENG.

SAGINAW, MICH., U. S. A.

WINDSOR, ONT.



JAMES JONES, Chairman

JOHN H. JONES, Pres.

THOS. P. JONES, Vice-Pres.

DAVID G. JONES, Sec.-Treas.-Gen. Mgr.

PITTSBURG-BUFFALO COMPANY*"The Jones Interests," Founded 1876*

FRICK BUILDING, . . . PITTSBURG, PA.

MARIANNA MINES

The Rachel mine at Marianna is the largest and most complete commercial coal plant ever constructed.

The most approved equipment known to the industry as well as the methods of handling and preparing the output for the market are the result of years of experience in the coal mining industry by the Jones Interests.

Although as high as 900 tons an hour had been hoisted from the shaft of the Rachel mine, its daily capacity is kept at 5,000 tons, which is steadily maintained without undue strain on the men or equipment, thus giving ample reserve for emergencies and allowing sufficient time for carefully screening, picking and preparing the coal.

The Blanche mine at Marianna as well as all the company's mines at other places are of the same advanced type.

At Marianna the company owns 6,000 acres of celebrated Youghiogheny coal, sufficient at 5,000 tons daily capacity to last 40 years, while there are three other seams not at present mined which will provide work ahead for 150 years.

We especially recommend this coal for gas producing, coking and steaming purposes.

Annual Capacity, 6,000,000 Tons

SALES OFFICES—Cleveland

Cincinnati

Philadelphia

Buffalo

Youngstown

Detroit

Chicago



es

in the
outlook
receiv-

Heavy
suitable
among
service

aton,
icago.



N. J.



S. A.

er.

on-

nd
ng

its
he
for

he

00
ed

go